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The Beattie-Smith Lectures.[1]

(UNIVERSITY OF MELBOURNE.)

AN APPROACH TO THE INTERPRETATION AND TO THE TREATMENT OF THE PSYCHONEUROSES AND THE PSYCHOSES.

By CHAS. I. MCLAREN, M.D.,

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LECTURE II.

IN my last lecture I drew attention to the two parts of the nervous system: the exterofector system and the enterofector system. I suggested that there were at least two types of individual: the one in whom conflict in the soul (which has its physical basis in the exterofector system) remained "compartmental" (there was no spill-over from the "psyche" into the enterofector system); another type of individual I described in whom there is a marked spill-over from the psyche into the enterofector system (every emotion writes itself upon and is expressed in the body). The first type of patient, in whom the conflict is so great that it results in disease, is a psychotic; the second type is the typical neurasthenic, with manifestations in all those parts of the body innervated by the enterofector system. The question presents itself whether the spill-over from the exterofector system is in the nature of a relief to the soul. In other words, are we to discover that the psychotic is so because he has less physical expression of the trauma of the soul? I would commend to the observation and experiment of physicians and physiologists a series of experiments and observations which would give

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statistical information as to the comparative amount of physiological spill-over to a given stimulus in (*a*) groups of psychotic patients, (*b*) of normal patients, and (*c*) of neurotic patients. The experimentation would not be difficult, and results which have not yet been sought might be obtained and might prove of considerable value to the medical profession.

It will be necessary for us now to turn our attention to the work and findings of modern medical psychology. Three outstanding names suggest themselves: Freud, Adler and Jung. I shall make my review of their teachings a critical review.

The general conception of "conflict" in the soul is the one which Freud proposes in his interpretation of psychological disease. That conflict he sees as between the elemental urge of sex and the inhibitions of society. I think a better and truer generalization might be found in the suggestion that the conflict is in "urge" of all sorts and in "inhibition" of all sorts. There are other urges besides the urge of sex, nor are society and its conventions the only source of inhibition. On the contrary, it is not difficult to imagine a situation in which the individual in his ethical attainment is far in advance of the average of society, when society is, in fact, breaking down those sanctions within the personality itself which are at war with the licence which society is offering. Is it not the case that there are always individuals forerunners of society's laggard progress?

The next of the important ideas advanced by Freud is that of the "unconscious". That there is such a thing as the real "unconscious", and that it is a determinant of some pathological as well as normal behaviour, there can be no doubt. In my view, however, much too much stress has been laid upon the unconscious quality of the so-called unconscious. Factors unrealized, unrelated, unrecognized as important in the situation there usually are. Indeed this fact, that they are unrealized, unrelated and unrecognized, constitutes their menace. But in opposition to what Freud emphasizes, they are not for the most, I think, actually "unconscious"; my experience rather would lead me to appreciation of the truth of the adage which tells us that "the heart knows its own bitterness". The mountain of difficulty confronting the overwhelmed and defeated patient is so tremendous that, paradoxically enough, that seen and realized mountain is as much taken for granted as the air he breathes—and breathing is by no means an unconscious process — and a threatened asphyxia at once fills up the whole field of consciousness.

Freud's teaching about "repression" links up inseparably with his development of the idea of the unconscious. Freud's idea of the mechanism and the results of repression into the so-called unconscious is not difficult to grasp—approximately this: When a man experiences something intensely unpleasant, he tries to drive it out from his mind. In fact this literally cannot be accomplished, and the thought is driven down and under. As an illustration I have been accustomed to remind my students of the history of Lenin. The Government of Russia tried to repress Lenin. He was banished to Siberia. Then came the hour of the Government's crisis and Lenin came back. As in the body politic Lenin came back, so with the individual who has no better way of dealing with unacceptable ideas and emotions than to attempt to get rid of them. In the time of crisis these emotions return to wreck his soul. A useful distinction may be drawn between those normal, necessary and salutary efforts by which a man disciplines and restrains his primitive appetites and that psychological subterfuge by which he seeks to deny the existence in himself of that which is unacceptable.

The name which Freud has given to the type of examination to which he submits his patients is "psychoanalysis". There is a whole literature of the subject. As Dr. Brown, of Oxford, has well pointed out, a better name for that of which Freud writes is "autognosis"—the bringing of a man to self-knowledge. We remember that this was the key by which Socrates unlocked the doors of progress to the soul. "Know thyself" he held as the first requirement. It is, of course, of enormous importance that a patient comes to some objective view and realization of his own situation. I do not believe, however, that the method suggested by Freud is the only one, nor even the best one for the purpose sought. His requirement of perhaps six months' continuous investigation before the ultimate conclusion can be reached seems to me tedious and laborious to a degree, economically unfeasible, and actually unnecessary. From a colleague of mine, the head of the dental department in the medical school in which I am, I gathered an analogy, illustrating the point which I desire to make. My colleague tells me that ordinarily the time required for the extraction of an unerupted molar may be several hours, but that by the technique of one man of unusual manual dexterity the desired result may be obtained within a few minutes. Contrary to what Freud maintains, I think it is often possible to elicit the relevant information in a case of profound maladjustment to life at a single consultation, and in that short time to begin at least to offer to the patient those principles capable of proving solvent in his situation.

Freud attaches very great importance in the development of mental disease to the influence of early environment. Facts and experience are, I believe, bringing constant confirmation of the extraordinary importance of early life in the evolution of the mental and "nervous" maladies; but I cannot agree with an emphasis placed on single incidents as of paramount importance. Even where it has been possible to unearth one forgotten memory, and, after doing so, to bring amelioration to the patient, the argument may be lame and the conclusion invalid. Rivers, in his book on the subconscious, quotes the instance of a British officer who, during the War, suffered from claustrophobia, so that he

was unable to remain underground in a dug-out. In Rivers's illustration it was demonstrated that the phobia was caused by a forgotten memory, and that the officer had, when a child, been imprisoned in an underground cellar by a ferocious dog. When this forgotten memory was brought to light the patient was relieved of his special phobia. This, you will say, is proof positive that the incident is of paramount importance. But even here we must take into account the whole temperament of the patient. The incident recorded occurred to this patient at an early age, and we may believe that similar or worse trials befell many children of a like age, and without such untoward result. I suggest that, had this patient not been of a specially timid disposition, the incident would have had no permanent effect upon him and that the most potent cause of "timid disposition" is, commonly, preconceptions derived from continued and repeated suggestions of fear from parental attitudes.

Another of the ideas to which Freud has drawn attention is that of "fixation". An old idea, familiar in the experience of the race for many generations, and expressed in such simple judgements as that "so-and-so is a big baby" or that such a one "has never grown up". Freud properly draws attention to the fact that interest is not allowed to go out into widening circles, but that the individual is afraid to launch his little barque in the deep sea of human relationships, attachments and responsibilities. Emotional regards which remain fixed at one level when they should be going on to another (as Freud rightly points out) almost inevitably become perverted and exaggerated.

It would be less than fair to comment on the Freudian theories without correcting a prevalent misconception that Freud, in emphasizing the universal presence and activity of the "libido", countenances any idea that the individual is simply to follow the lead of that urge. On the contrary, Freud says with unequivocal plainness not only that there is inhibition and the need for inhibition, but goes so far as to say explicitly, to quote his own words, that "civilization is built altogether on renunciation".

Finally, Freud deals with the methods by which, in his conception, the victories of civilization are won from the urge of sex. He calls this thing "sublimation". So far as I understand it, the imagery is a chemical one. I prefer to use the biological word and imagery and call this process the process of "metamorphosis", or, in plain English, "transformation". It is, I think, very important that we hold to the encouraging, indeed inspiriting, idea that there can be genuine transformation in human character.

In some of his views Adler is not different from Freud. With Freud he describes in terms of the same fundamental idea "conflict", but that conflict is not, as with Freud, in the realm merely of sex and society. Adler makes another, a larger, and, I think, a truer generalization when he sees the conflict as between superiority and inferiority, the struggle to overcome and the acceptance of defeat. Almost one might put Adler's idea into the old terms of a "struggle for existence". As he works out his thesis, Adler speaks of the three inescapable questions concerning which life demands an answer of every man and woman. It is in the successful answer to these questions that Adler sees the possibility of health and happiness, and, conversely, of failure and defeat; concerning these questions he finds the explanation of the psychoses and the psychoneuroses. The three inescapable questions of which Adler writes are: first of all, love, both in its spiritual and physical aspects; second, work, the ability with courage and persistence to devote oneself to the task of life and to do so in such a way as to win subsistence; the third question is the question of the individual's relation to society, his capacity to form friendships, his ability to live as a free being in society, neither arrogantly regardless in domination nor abject in craven submission. Adler's ideas concerning "attention" are important and encouraging. He emphasizes that it is impossible for anyone to attend at the same time to two opposite points of view. He sees in attention to defeat and apprehensive expectation of weakness and inability the sufficient cause of the resultant defeat and inability. He says that if the patient be but willing to avert his attention from such a view and to look steadily and determinedly at success and cure, great measure, indeed startling measure, of improvement can be achieved.

While accepting to the full the view that wrongly and pessimistically directed attention is a cause of illness, illness which may often be cured by the redirection of attention, I think it necessary to refute the crude and common misconception that "the neurasthenic is ill because he is anxious about his health". Such a conception may be true in some cases and may in others be absolutely false. If the object of a particular patient's morbid fear and attention is his own health, then (if he be of the hair-trigger constitution, with "spill-over" into the enterofector system) his fears about his health may very well be the cause of his ill-health. Such a patient is exhibiting the hypochondriac mentality. The worst of these patients are definitely insane. Their ill-health obsessions amount to veritable delusions, and, paradoxical as it may at first appear, they may be in quite good physical health. Their physical health depends on whether they are "compartmental" or "spill-over" in their constitution. But let it be most clearly recognized that a man may be most profoundly anxious, with an anxiety which (if he be of the spill-over type) is causing organic disease, yet the man is not a jot afraid for health or for life itself. This fact was brought home to me by a case in my own experience.

The patient was obviously profoundly anxious and disturbed—the anxious, nervous type. It would have been easy to have interpreted his neurasthenic condition in terms of a fear spilling over into his body. I examined him and was disturbed to find evidence of a progressive and dangerous tuberculous condition of the lung. In the man's already distressed and agitated state of mind I

hesitated to reveal to him the serious threat he carried to life itself. The facts of the situation, however, demanded some such explanation of his condition to the patient. I have never forgotten his reaction. He brushed aside what I told him as almost trivial: "After all", he said, "tuberculosis can only kill me." He went on to reveal the real cause of his almost unbearable distress. In a word, it was frustration, and frustration in a matter quite removed from the affairs of the body.

Koreans are a people who set great store by the things of the mind and opportunity for study. Circumstance (poverty, I think) was preventing this man from any hope of study, and, as he put it to me: "Without culture of the mind man is no better than the beasts that perish." What a travesty of the real interpretation to label such a man as "hypochondriac" and suppose he was ill because of anxiety about health, or could be cured by a Coué formula that he was getting better every day, or a Christian Science declaration that there was no sickness or trouble any way.

To return from this partial digression to the immediate consideration of Adler's work.

Adler has developed very helpfully the idea of compensation. It is a truism of physiology that, faced with a load or disadvantage (if such load or disadvantage be not altogether and immediately overwhelming) the organism responds physiologically with extra function and physically with hypertrophy. It is urged by Adler that compensation and hypertrophy are fundamentally true in psychology also. Adler gives numerous illustrations of patients who, out of the very fact of their weakness and inferiority, have attained to strength and superiority. Among Adler's books is "Understanding Human Nature". It will be found to be both simple reading and practically of high value to the practitioner in psychological medicine.

The third teacher to whose work I shall refer is Jung, of Zurich. I find him difficult to understand and to apply, but he has recently advanced a view which, I think, is both simple and of first rate importance. Jung has latterly stressed the importance of a failure in confidence as the fundamental cause of nervous breakdown. When the patient finds those worlds in which himself, his values and his hopes have been invested transient and dissolving, naturally important consequences occur in his whole mind and make-up. Jung points out that just this break-up of their whole world systems is what has happened to millions of persons in Europe and America in our day. War, revolution, depression are tragic commonplaces to a generation that thought itself secure. Jung's ideas are so obvious, I think, as to be incontrovertible. The corollary suggests itself that one of the first preoccupations of psychological medicine must be the discovery of what actually is trustworthy for the human soul and the encouragement of the patient actually to invest his confidence in that which will prove permanent and trustworthy.

Our attention so far has been occupied mainly with consideration of the causes, physical and psychic, of disease, and an attempt to assess the importance as causal factors of these two classes of assault upon the personality. Not only is it necessary to consider the relative importance of physical and psychological factors as causative in disease; the values also of physical and psychological remedies must be assessed. In these lectures I am concerned to stress certain perhaps too little emphasized factors, psychological and spiritual, in the treatment and cure of nervous and mental disease. I am not unaware or unappreciative of the value, indeed of the necessity, of physical and physiological remedies. I saw in Vienna the very room where Wagner Jauregg made those epochal experiments with the injection of the malarial parasite which has accomplished in many cases the cure of general paralysis of the insane. When one reflects on the absolute hopelessness only a few years ago of that disease, we ought, I think, to regard the success of Wagner Jauregg as token of that ultimate complete physiological success in the treatment of disease which is the goal of medical science. The final goal may be far off, but when all the resources of physics, of physiology, of biology and of eugenics are able to be mobilized for the treatment of disease (even of maldevelopment), is it too much to hope that we shall achieve to the assured success of physiological health? But it is, I think, very important that we comprehend the nature of that goal—to wit, a physiologically healthy organ and organism; that much and nothing more. We should recognize that this is what we seek and is all we can hope from physiological methods of research and treatment. We are by no means warranted in assuming that when we have attained that healthy body we are entitled from that success alone to postulate the attainment of the healthy mind, to suppose that a healthy body means also and necessarily a healthy and sound personality. So to assume is as if one were to assume that mathematics would eventuate in the mind of a class of students if only the laws of hygiene and dietetics be observed by the students. In point of fact, the only way to attain to mathematics is by the application of mathematical principles. The healthy physiological brain does not necessarily connote the moral and ethical values of the personality any more than it connotes mathematical knowledge and skill. Morals and ethics can be won only through moral and ethical inspiration and education.

I have already sufficiently stressed my belief that disease, both bodily and mental, may be genuinely psychogenic in its origins. I wish now to introduce an important distinction, and one, I believe, which has received little, if any, explicit recognition and definition in scientific medical thought: the distinction between trauma of the psyche, or soul, and that of the spirit.

Man shares with the animal creation an emotional nature; the reaction of his psyche, or soul. For instance, it is a well established fact of experience that a dog may sicken and finally die of soul

trauma—sorrow at his master's death. But there is another part of man's nature unique to him, and probably not possessed even in an elementary degree by other sentient creatures. This part is man's rational or spiritual nature. At its highest it is concerned with issues—issues utterly unknown in the animal—in which man's loyalty to and his revolt against the truth, his suspicion of and his confidence towards the divine, are the problems of focused attention.

One finds analogy for this idea of a plane above the physical, above the physiological and, finally, above the psyche, the plane of the reason and the spirit, in the conception of the fourth dimension. The mathematical prophets had long foretold that fourth dimension, and finally it was revealed, and that quite simply, in the time-space continuum of Merikowskiy's four-dimensional universe.

Man is in fact an incorrigible idealist. Nothing but rationality itself and discovered meaning in the cosmos can slake his thirst for reason. Such is the universal and authentic witness of the history of human thought. Plato, with his "city, of which the pattern is already in Heaven", evidences that fact; and all the idealists and every common man unite in word and attitude to confirm that testimony.

It is of the nature of man that he must search for meaning; it is a necessity of his being that a purpose summons him onward; and in truth there is compulsion that demands his belief. It is deepest instinct which responds to those high words of Marcus Aurelius: "Great is the truth, and it shall prevail." Conviction grows upon me that it is in the realm of the spirit that we are to find the causes which are of paramount importance in the production of the true psychoses: meaning, purpose, belief in truth, these are the tremendous issues of the spirit of man, the battle-ground of his real life, the place of victory and of defeat, a defeat which is often the alienation and destruction of his mind. I am well aware that the first reaction of many to the suggestion I offer of the spiritual causation of the true psychoses will be one not only of entire incredulity, but that the idea will appear, in the light of obvious evidence of the overwhelming importance of brain deterioration as a cause of mental malady, as quite fantastic. I venture to ask that attention be given by critics to discover particularly what exactly is the thesis which I am advancing. For instance, nothing I urge denies or carries any suggestion but that the insanity of the general paralytic is brought about by that observable and observed infiltration of the brain cortex which is part of that disease. That fact of brain pathology and psychiatry does not, I think, contradict or negate what I believe to be another fact of Nature: that in the causation of the biogenic psychoses psychic factors are of first rate ætiological importance. In general one may be permitted to suggest that the apparent reasonableness or otherwise of a thesis, especially at first view, depends very much on the accepted point of view of the observer. Galileo's views appeared ridiculous to the man in the street, for whom there was apparent ocular demonstration that the sun revolved round the earth.

To my own mind, I admit, there have been difficulties, many and serious, in accepting the ideas I now propound. Among them these: Surely common experience teaches beyond peradventure that there are countless persons whose whole lives are at variance with all the higher sanctions, who yet remain stable in mental balance; there are many, too, of blameless life and practical idealism who yet become alienated in mind. How do my suggestions square with these indubitable facts? I reply: nothing I have said is meant to suggest that the insane person is more wicked than another. William James has suggested that humanity may be divided into two classes, whom he designates the "tough" and the "tender"—men who, like Abraham Lincoln, a victim, once at least, of a depressive psychosis, "touched life with unprotected hands".

This further and relevant thing I have learned from life and medical practice in a foreign country and in an environment entirely different from our own. It is far too easy for us medical men, in contact with individual cases, to consider overmuch the situation as it appears in the individual and to forget that the study of the individual instance gives far less understanding of the whole problem than does a consideration of those broad general causative factors working through his community.

One may safely prognosticate on meeting a certain considerable percentage of cases of, for example, rheumatoid arthritis and varicose veins in Australia, and just as surely a minimum of such cases in Korea; or, conversely, one may expect beri-beri and leprosy cases in Korea and not a single example of such disease in Australia.

Of course, I recognize that a further and closer examination of the individual will reveal why, in a community where all are exposed, this particular individual fell victim and became affected by a particular disease. My point, however, is that ætiology of disease is to be understood even more by consideration of the broad general factors operating in a community or society than by microscopic attention to the factors in individual life. If efficient causes are operating widely, it is mathematically sure that a certain percentage of the population will succumb to a particular disease.

I have urged that deep in the necessities of the life of man are his demand for meaning, his need for purpose in life, and his dependence upon truth. As individual he falls short of this, his true and spiritual destiny, and as individual he pays for his failure. But there is an enormously weightier factor. When one considers the ideas and ideals by which society, as society, community or nation, is content to shape its living, how startlingly unhygienic and unsanitary (in deeper meanings of the words) those ideals are. Where is that society that has, as society, any adequate conception of the meaning of its own existence? What community,

as community, is integrated and carried forward by some high and dominating purpose? (Perhaps the nearest approach to such a common purpose is that of a people uniting for the—at best self-preserving and at worst the degrading—purposes of war.) Or where is the society or nation primarily and consciously devoted to the discovery and service of the truth? As I consider these undeniable facts I wonder not that there are those among us who succumb to the noxious and lethal miasma of such an atmosphere and become psychotic. Rather I marvel that midst such universal contagions so many retain measures of mental health.

From these considerations I proceed to my interpretation of the essential nature of the psychoneuroses and the biogenic psychoses. Disregarding some less important varieties, we may consider five: neurasthenia; melancholia or the depressive psychosis; its counterpart, mania; the schizophrenia or *dementia præcox* class; and paranoia or delusional insanity. The interpretation I offer of these conditions is simplicity itself.

Neurasthenia is not, as it is called, "weak nerves"; nor is it endocrine misfunctioning; nor septic teeth and tonsils; nor hookworm; nor any other of the minor physical maladies which may or may not accompany it and which may or may not aggravate the essential condition. Neurasthenia is what it seems to be—anxiety. Money, sex, domestic infelicity, wounded feelings, these and other like unsolved problems are the cause of and are neurasthenia.

What is melancholia? Depressive psychosis? It is, I believe, a genuine intrapsychic paralysis (with, I surmise, disturbance of brain cell physiology and perhaps withdrawal of synaptic contacts) which results from a deep despair. I do not at all suggest that a depressive psychosis is just the same as any ordinary discouragement; that the patient could "cheer up" if only he cared to. I am sure that he is psychologically and physiologically incapable of doing so by any voluntary effort of his own. But the thing itself is a vicious circle of despair. Faith has gone: faith in life and meaning and success. For the melancholic, circumstance has become omnipotent and fate determines, and fate is dark and cruel.

Mania, on the other hand, is an intoxication and a hyperactivity, an intoxication with euphoric ideas. It is energy dissipating and unharnessed to weight of work, an intoxication with, a saturation and supersaturation with self, an exaltation beyond reason or reality.

What is *dementia præcox* (or schizophrenia, which is only Greek for the "mind in pieces"—and degraded too)? Here we come to what, to my mind, is near to the central problem, not of psychiatry, but of the interpretation of all human conduct. In physics causation is always from behind; the result follows. This law of causation is the foundation on which has been built the imposing edifice of modern science. But the law cannot be applied to human conduct. I do not deny a certain truth and applicability of the so-called "law of psychic determinism", a mechanistic theory which worked so admirably when applied—as it may properly be applied—within the scientific and philosophic fiction of a determined universe. That theory has been applied in an attempt to understand and explain that real universe about which we are by no means entitled to assume *a priori* the absence of freedom and of indeterminism. Teleological conceptions have been brusquely dismissed as nonsense. In point of fact it is that attempted dismissal which evidences itself as foolishness. The old biology used to tell us that organisms developed from accidental changes in structure which happened to have a survival value. The new biology is beginning to say that function (which is biological purpose) has made structure. If in general biology thinkers are compelled increasingly to reckon with factors of purpositiveness and of purpose, how much more necessary is it to find place for such ideas in the realm of psychology, for in psychology this paradox is true: causation is from before, not from behind; in other words, the goal, the purpose in front, not the mechanism behind, is the real determinant of conduct. More, purpose is simply and literally that which holds man together; lose purpose, take away meaning from life, and the mind disintegrates. The patient becomes schizophrenic. Here I believe we are to seek the fundamental cause of this psychosis, and in these terms alone, it seems to me, is there hope of an understanding of the disease.

What is delusional insanity? It is what it seems. The patient lives in a world of self-deception which he himself has made. He finds himself in fact inferior. This fact is too painful for admission, even to himself, and so he runs away from the reality and the truth, which requires such admission, into a world of his own making, a world where he is king, a world in which his own unsuccess is easily explained by the concerted malignity and persecution of others.

I know of no more penetrating psychological analysis of this condition than that offered by Saint Paul: ". . . since they refuse to love the truth that would save them. Therefore God visits them with an active delusion, till they put faith in a falsehood." (Moffatt's translation.)

As I have endeavoured through the years to simplify my ideas about the causation and the nature of the psychoses, I have epitomized my conclusions in this sentence: that the biogenic psychoses are due to "preconceptions about life which are in fact misconceptions about reality". Whence come these misconceptions? First, from a certain proneness inherent in our erring human nature. Secondly, from the tremendous power of our earliest environment, from attitudes and beliefs accepted by us from parents and elders in our earliest years. I am not a behaviourist, but I cannot but believe in the immense importance of such influences. A true inherited weakness of the physiological nerve structure there may sometimes

be, but how universal is the power—for health and for weakness of mind and character—of these early uncritically accepted ideas.

It has indeed been suggested that the future of man's evolution is not likely to be along the line of further changes in his body, but of change in his mentality and ideas. In this connexion one recalls the striking incident, related by Benjamin Kidd, of the naturalist who was fortunate enough to be able to approach in the absence of the dam, fledglings of a particular variety of notoriously shy wild duck. No signs of fear were exhibited by the fledglings. On the occasion of a return visit the mother bird was near and flew off in terror, wildly calling to the fledglings to follow. On a third visit, though the dam was not present, the fledglings exhibited every sign of alarm at the approach of the investigator. All we know of the establishing of conditioned reflexes and the welding of these reflexes by emotion into the very structure of the being makes it easy for us to realize the paramount importance of these early "preconceptions which are misconceptions about reality".

And so we return to the ideas of Jung—ideas of loss of confidence, that is faith, as cause of mental breakdown—and to the necessary corollary for the practising medical psychologist, that he endeavour to discover with and for his patient what is trustworthy and that he seek to encourage his patient to put trust in the trustworthy and go forward.

It is not difficult, I think, to demonstrate that literally we live by faith, that faith is the condition of the life of the psyche. The only persons, to my knowledge, who believe nothing, are the aments — individuals without minds; all others believe something, though often the system of belief is woefully inadequate. I remember once inquiring of a Korean patient: "What do you believe?" He replied: "I attend a Christian school." I told the young man (not unnaturally he was a neurasthenic) that belief of which the sum and substance was "attending a Christian school" was a futility. I asked another patient in what he believed. He told me he believed in himself. I pointed out to him that he was mistaken and that in point of fact at that time that in which he intimately and distressingly believed was a government power which was thwarting and frustrating his life's passion to go to Russia and to study communism.

If I am called upon to cross a frozen river, my happy success in the venture will depend (*a*) on a belief that the river is frozen firmly enough to support me, and (*b*) on the harmony between my subjective belief and the objective realities. If my belief, however firm and optimistic, is mistaken, I shall come to grief; and be the ice ever so firm, if I am convinced that it will not bear my weight I shall remain in paralysed apprehension on the bank.

In a world smitten with economic depression, poisoned by class hatred, betrayed by international suspicions, menaced by war and threatened with the very destruction of our civilization, by and into what belief shall a doctor and a practitioner of psychological medicine seek to upbuild his patients? I have sought to define my own creed. It includes these major tenets:

I believe in science: theoretical science which has given us more than a little understanding of the world of matter and the world of life; practical science, too, which has brought power to man, has stayed disease, and has multiplied the loaves and the fishes.

I believe in philosophy: man's long search for wisdom, which has brought some illumination and understanding to mind and soul.

I believe in romance and the romantic imagination, as Miss Farjean has written:

> A lad once walked in Warwick woods
> And saw the Fairy Queen,
> . . . . . .
> Not one lad in a thousand lads
> Or in a thousand years
> Is given eyes like that lad's eyes,
> Or ears like that lad's ears.
> . . . . . .
> But by his song of Philomel
> And words of moony sheen,
> You'll know that once in Warwick woods
> There *was* a Fairy Queen.

I believe in human nature and its inner fight, and I believe in the words of the sages; for if to be a sage means anything, surely it means to see with insight and intuition into the nature of reality.

In my contacts with my patients I constantly seek myself to gain new wisdom from their words and somehow to mediate something of the strength and truth of their words to my patients—words perhaps of Buddha, or of Confucius, or of Jesus. I do not suggest that I preach dry-as-dust sermons to a bunch of raving lunatics and that forthwith they all say "Amen" and recover. I do affirm that the contagion of a rational, sustained spiritual enthusiasm, linked with sympathy, practical helpfulness and common sense, is a contagion to which the psychotic is singularly susceptible. To such contagion it were well if we alienists might attain.

I recall the important testimony I had on this score from the lips of Dr. Gamble, Superintendent of our Kew Asylum. We were visiting together the women's refractory ward; and it is, of course, the female maniac who is noisiest and most difficult to restrain. Dr. Gamble's testimony was this: "When Nurse X is in charge the ward is like a Sunday school." My experience corroborates the testimony of Dr. Gamble, that to certain persons and a certain spirit the psychotic is sensitive in a way which quite contradicts common notions of his inaccessibility.

The classical example of such power of influence with the insane is, of course, to be found in the New Testament. Simply, as some have done, to reject or to discredit these narratives, seems to me evidence neither of sound critical judgement nor of historical sense. Huxley, of course, utterly rejected and condemned the stories as examples of "degrading superstition about devil possession". So

they ought to be rejected if one thinks of spirit in materialistic and superstitious terms and imagines devils with horns and a tail. Such was not Socrates's fine spiritual conception of the "dæmon" voice that called him to the high adventure of his life, nor, I believe, are the conceptions of a wisdom higher than that of Socrates at fault. Ultimate issues in the psychoses prove themselves, I believe, to be spiritual; a materialistic medical science has failed to hear the evidence of spiritual issues which is literally shouted from every asylum ward.

My own humble experience matches in some degree the uniform testimony of the New Testament that spiritual issues do quickly appear when the psychotic comes in contact with a personality for whom spiritual loyalties are the important realities in life. To quote one of numberless examples, the following incident. Korea is almost destitute of any provision for the insane; the mentally afflicted roam about the streets and the countryside; nor are they unmolested; their unhappy lives are often made more so by the gibes and the cruelty of the crowd which follows and torments them.

Walking along the streets of the capital city I saw one such unfortunate in the centre of an amused and railing crowd. The fantastic creature was strangely garbed and was carrying a spray of peach blossom. That was the first—and advertised to all the world with eyes to see—spiritual issue that emerged. For—superstition, of course, but in the realm of the spirit—the peach blossom is the charm and talisman which in Korean thought is potent to drive away evil spirits. I went up to the poor excited creature and invited her to come with me. Immediately she recognized me as her friend and accompanied me to the hospital. She came with me and sat quietly in my office. From her conversation and bearing I judged that her occupation had been that of a prostitute—not a savoury occupation in any country, and as desperate and degrading in Korea as elsewhere. Almost immediately, and of her own initiative, she made an interesting remark—and here the second spiritual issue: "There are only two sorts of people", she told me, "that I trust: children and Christians." And the third spiritual issue followed hard from the lips of that pagan Korean prostitute: "I am the mother of God", she told me.

Before concluding with quotations of some case histories I shall attempt to make concrete some of the general principles of which I have spoken, by outlining my method of approach in certain cases. I shall not give detailed case histories of neurasthenics, hysterics, obsessional and phobia cases which have shown successful result. I refrain from doing so because there is little advantage that a writer should be one of those who "twice they conquered all their foes and thrice they slew the slain". I shall content myself with brief reference to a number of these cases. It is a well established fact that these milder forms of mental maladjustments are often susceptible and responsive to well devised psychotherapy. At the same time one is entitled to point out that they are by no means easy of cure in all cases; and that, if misdirected treatment is applied, they remain unbenefited.

Neurasthenia I regard as a definitely and often rather easily curable disease. This opinion is in marked contrast to that of a neurological professor known to me, who, at a medical meeting, said that he had treated some thousand cases and was frank to admit that he had never seen a cure. I do not regard myself as cleverer than my colleague; may it be that he has been on the wrong scent and at the end of the chase is now perchance barking up the wrong tree of merely chemical therapy? Just that mistake in physiological medicine may be held responsible for very much of failure and hopelessness in practice. While I say that I regard neurasthenia as curable, I do not claim to cure all my cases. Most of the patients I think I can help, and many of them have asserted that they are cured. Some I cannot help; for some prefer to persist in the way they have chosen rather than change that way and be cured. I think of one very intelligent patient who admitted quite frankly the causes of the illness, acknowledged that the way of life being adopted was definitely against the grain in which the world is made, but as frankly decided to persist in that way.

The hypochondriac type of neurasthenia is a special trouble alike to the patient and to his medical adviser. Some of these patients are not mere neurasthenics, but are definitely deluded on matters which touch their physical and bodily security.

The ethical problems of a sensitive conscience are, I am convinced, capable of producing real neurasthenia. The condition is not to be cured by pooh-poohing the whole thing, but by accepting it as seriously as does his patient. I remember a well marked case of neurasthenia in a young man, a modern Jonah, running away from what his conscience told him insistently was his call to preach.

Examples such as these come to my recollection. A father has for years been carrying an intolerable burden of financial responsibility in the effort to provide a liberal education for a large family; at a time when strength is being strained to a breaking point there is suddenly added a domestic tragedy. A mother is bereaved by the death of her child. A sensitive wife is wounded to the quick by the alienation of her husband's affection. A youth is thwarted in his cherished dream and life's purpose to go to Russia and study communism and then return to cure by work and sacrifice the ills of Korean society. A married couple are denying Nature and their marital obligation, content to be merely mutual satisfiers of each other's appetite. A religious mystic is overwhelmed with doubt as to whether or not in fact there be a God. A timid soul is pursued by the threatening spectre of danger and of death. Overweening pride at the heart of a man is deathly hurt by the man's recognition of his own inferiority. These are all actual cases with which I have had to deal. I have sought, with the patient's cooperation, to understand and reveal the real issue in life. Often the subject is very tender and deeply concealed, but if only the facts be revealed and acknowledged there is hope of solution. How to discover the solvent principle? I think success will come in "counsels of perfection". There is usually

more than a suggestion of dismissal as entirely impracticable in this work-a-day world in that phrase "counsels of perfection". I have come to believe that while, of course, such counsels involve difficulties and sacrifice, they are in fact the only ones practicable for the neurasthenic. Some folk no doubt are blunt and tough enough to be able to make shift and apparently get along fairly comfortably with very different standards. Not so the sensitive neurasthenic.

In more detail, and in conclusion, I deal with the treatment of what, in my practice at least, is perhaps the commonest and most baffling malady which comes to me—the anxiety neurosis due to the simple and obvious difficulty of the means of subsistence and the pressing responsibility of provision for dependants. If the simple facts of life be not overlooked, cases of this ætiology will be commonly recognized, even in this relatively favoured civilization of ours. They are far more common, graver and more difficult of relief in that depressed and poverty-stricken country in which my lot is cast—a country where the average income is about £10 a year and yet where large numbers of the population have aspirations after culture and advancement.

A man is desperately anxious and burdened about his circumstances; and his circumstances, on inquiry, are found to be objectively very difficult. All day long in my office I am called on to deal with just such cases. Is there anything effective to be done? Assuredly bromide, *nux vomica* or iron is not likely to be of much assistance. If I have attained to anything that is of value to meet this problem, it certainly has not been by some cheap and easy wishful thinking, for to no subject have I given deeper (and often it has been very painful) thinking.

Monetary help may be of real assistance; but one might be as rich as Rockefeller and still at a loss to help all the persons that apply. Effort for readjustment of our ill-devised and ill-functioning economic order is another obvious duty, but if the individual patient has to wait till that last and final revolution occurs which is to result in a Utopian economic system, he will wait long enough. But I come to believe this astonishingly optimistic thing: that it is not necessary to wait so long as that.

A short digression: I have a friend who is also a practising neurologist and psychologist. He is warm-hearted and deeply distressed for the troubles of his patients, and he feels for their economic distress. He has a remedy. He is an enthusiastic advocate of the Henry George system. I think it must be a good system, for I know other good men of high intelligence and altruistic ideals who are its enthusiastic advocates. I can well believe that the adoption of the system would be followed by good results, but I ventured to say to my friend two things: first, that if men are really men of good will, even a bad system is not quite unworkable; and secondly (and happily, I think), that there is not any system which will produce peace and plenty if men are selfish at heart. I went on to say another thing: that I thought my friend had not been fundamental enough in his thinking in stopping at the Henry George system. After all, is not this the fundamental consideration into which ultimately all other economic considerations and systems must fit? What is the nature of the final economic and other reality with which we have to deal? How is the world governed? On what principles finally does it move? My friend took two exceptions to this question and inquiry which I proposed. They were mutually contradictory objections which he advanced. They amounted to this: that such a question was nothing better than foolishness for the feeble-minded. The other contradictory objection was that a question like that was too profound; that it was beyond the competence even of far wiser men than himself. I submit that neither of these objections is valid and that the successful treatment of a neurasthenia due to anxiety about the wherewithal must proceed from a satisfactory answer being obtained by the patient about this question of the ultimate nature of the economic realities with which he has to deal. I submit further that the answer is to be obtained by the same method that is used in every other question of science and of life—from the method of observation, experience and experiment. Research is not only the sometimes somewhat pretentious thing done in a laboratory with test tubes and measuring scales. Research about the ultimate nature of the power and reality with which we have to deal is an inescapable necessity which presses on every man, including, and especially, the neurasthenic.

Concerning this matter of anxiety about the wherewithal, the great teacher and physician of the race dealt in unusual detail and said some striking things. He spoke of the clothing of the lilies of the field and the feeding of the birds. What he said was, I believe, either moonshine and worse (for it would, if false yet realistically depended upon, be so dangerously and disastrously misleading) or it is, if true, the one important fact which guarantees the successful solution of all the problems of the anxiety neurosis patient. A careful reading of what was said, as I have read carefully many times, reveals that the wisdom of this teacher is neither Couéism nor "Christian Science". But it does affirm that if a man sets himself resolutely and primarily to mould his purposes to the purposes of the universe, then he will discover that the universe has already come to his aid and that the things which he needs are in fact forthcoming. This, if true, obviously offers a simple and entirely efficient and sufficient cure for the anxiety neurosis and all its accompanying symptoms and circumstances. I have not known a very great many persons who have adopted this way of life and treatment, but I have yet to find one who, having seriously committed himself to it, found it unsatisfactory.

Case Histories.

In presenting histories, details of physical findings have not been given. The ordinary routine of hospital practice was, of course, adopted and the indications for general treatment were followed. It is not, however, necessary to give those details for the special purpose of the present review.

The first three cases to be quoted are those of patients of Aryan stock. Part of the reason for this selection is lest some readers might have the opinion that the methods suggested might be of service for the special circumstances of an oriental people, but would be less fruitful among our own British stock. A second reason for the special selection adopted is as follows. A misunderstanding of my thesis might interpret it as suggesting that the person of idealistic commitment to life is thereby protected from threat of mental alienation. I repeat that such is not my view, and I quote three individuals who might be classed as "professional idealists". The later cases quoted are those of Korean patients, examples of manic, of depressive psychotic and of schizophrenic alienation. Marked benefit was observed in all but one of these recorded cases; no claim, however, is made by me of uniform success.

A male, X, aged forty-six years, a missionary doctor, suffered from several attacks of retarded mental activity, with severe dysphoria and mental pain. On several occasions, though bodily health was normal, he was compelled to relinquish duties for periods of months. He sought advice of neurological specialist at the Pekin (Rockefeller) Union Medical College. After careful physical, neurological and psychological examination the diagnosis of cerebral arteriosclerosis and recurrent psychosis was made and it was kindly, but unmistakably, suggested that retirement from the strenuous life of a missionary teacher might be advisable. The advice of another physician, who was also a trusted friend of the patient, was sought. This unusual elucidation of the situation was offered to the physician by the consultant: "X, what you need is more faith in God." The man himself was painfully aware of conflict—conflict which was none the less painful because it had attached itself to issues not usually overtly stated.

Would Freud call it a conflict between the ego and super-ego? In simple and easily comprehensible terms, it was conflict between a quite natural demand for security (based on the almost universally held preconception that one of the prime necessities and duties of life is to maintain financial security by an assured bank balance)—this urge on the one hand and an urge to conform realistically (if not quite literally) with the startlingly unconventional injunction of Jesus to his disciples: "Fear not . . . sell what you have and . . . give alms." The conflict between these two urges and the doubts in the mind of a teacher of Christianity as to the wisdom and practicability of the injunctions of Jesus produced such a condition of severe mental stress and dysfunction as to merit the diagnosis of an intrapsychic paralysis or mild depressive psychosis. It came about that the increased faith prescribed was attained through the wisdom and sure faith of another. It proved solvent of devitalizing perplexity. Health and vigour were restored. Resignation from the place of responsibility was not necessary. The years bring more, not less, capacity for work.

A missionary, Y, aged fifty years, of particularly strenuous habit, became affected with what was diagnosed as sprue; there was also a profound accompanying anæmia. Increasing pains were complained of in the lower limbs. During furlough advice was sought in leading clinics in America and Britain. A vague diagnosis of "neurasthenia" was made. After return grave increase in symptoms occurred, and later signs of subacute multiple sclerosis of the cord were undoubted. The general and economic outlook was very ominous. Mental distress became a marked feature of the case. An indubitable depressive psychosis developed, and in this state the patient proposed suicide. The unanimous opinion of the responsible committee was that resignation was inevitable. Against that opinion I took an uncompromising stand. I was satisfied that such a course would have been disastrous and that hope of recovery would have been closed. Relying on such resources as those indicated throughout this article, though at that time, ten years ago, they were held to by me much more tentatively than now, treatment was undertaken. A recovery on the mental side ensued. In spite of continuing disability from the cord sclerosis, ten years of further strenuous labour have been carried out.

The patient has subsequently borne testimony that the one crucial factor in the situation was the loss of his practical faith in God, at a time of apparently insuperable difficulty, and that the thing more than any other thing which was at once anchor in storm and light in darkness was the faith in God which sustained his physician and led the physician to adopt attitudes in diagnosis, prognosis and treatment which proved of determining helpfulness to the patient.

The history of Z and the circumstances of the case are very similar to those of Y.

The patient was a missionary of strenuous endeavour. He had an organic nerve lesion and experienced financial embarrassment. Despair and a definite depressive psychosis occurred, with attempted suicide. The patient became blasphemous and violently opposed to his former religious interests and attachments. He was seen by a specialist, who at first hoped for recovery; later, the symptoms having lasted three years, a grave prognosis was adopted. After six years the patient became suddenly and dramatically better. The patient himself attaches enormous importance to a passage in Scripture which his eye lighted upon: "Thy tacklings are loosed." The patient, who had (except for the brief period of active opposition) always been strongly religious, interpreted the coincidence as an answer to the prayer which he had made, in what seemed to him a final extremity—prayer for guidance from the Scriptures. He recovered forthwith. I saw the man years later and received his intimate confidence. He was in mental health, though still showing neurological symptoms (slight tremor).

The following are Korean cases.

I recall the case of a young girl who was suffering from a definite depressive psychosis. The cause was not difficult to find. Above all things she must study so that she might teach her own people. The way to study was hopelessly blocked. She became psychotic. Under treatment she was brought to see that not to study, but to know the will of God and to do it must be the central thing in human life. She accepted that as the principle by which she would guide her life and went away to her own home in the country, content to use the little training she had already acquired to teach a few village children even less privileged than herself.

The patient's change of attitudes was from those of the psychotic to those of the sound mind.

I recall the case of a young woman who was suffering from a definite manic psychosis with which was associated a strong schizophrenic trend. The cause was not difficult to find. Above all things she must go to America to study. She was brought to see, under treatment, that not to go to America, but to know the will of God and to do it was the central thing in human life. She accepted the truth and returned to her Korean home.

The patient's change of attitudes was from those of the psychotic to those of the sound mind.

A young Korean woman became strangely swept away by an incestuous infatuation for a near relative. The intimacy involved would be disallowed in any society, and in Korea, where even the distant relationship implied in bearing the same clan name is a bar to marriage, the whole idea would be regarded as depraved to a revolting degree. Between the ungoverned urge of her infatuation and the unyielding barrier of public opinion there developed a bursting force so strong as to disrupt the personality. Her conduct became strange, obstinate, antisocial to a pathological degree. Merely to affix a label to a type of conduct and behaviour elucidates very little; yet diagnostic labels have their use, and for this girl's derangement the schizophrenic label seemed more in place than another. Admission to the hospital was arranged. The poignant problems of the life were candidly examined and the dictates of the social moral code were upheld. The impossibility of licence, the fact of freedom in a willing subjection to an ethical and spiritual order, the claims of the moral imperative were urged on the patient. She was not wheedled by compromise of standards, but challenged by standards difficult as the ideal. She responded and left the hospital in a state of mental health.

A young woman, a patient first in the government mental hospital and then in our own, had the following history behind her. She had had a hard financial struggle to qualify as a teacher; then she made a disappointing attempt to earn enough for the barest subsistence; then (perhaps part of her disease) she formed an unrequited love attachment to an older married man whose reactions towards her were only those of ordinary friendliness. Then she had a grave and furious mental breakdown. She was noisy, destructive, forgetful of decencies and modesties, incoherent, irrational, disorientated, deluded and self-accusing. The picture was not of a mania, but either of the catatonic excitement of *dementia præcox* or the so-called toxic or confusional insanity. If this latter, it is significant that the only toxin was that purely hypothetical toxin manufactured by psychic stress. Neither at that time nor later was there evidence of bodily poisoning or weakness. To my mind there is little doubt that the whole condition was psychogenic in its origins. The patient spent three months in the hospital, receiving the usual care and sleep-producing medication. We sought also to support and ease her suffering mind, to help her to some perspective about the self-torturing accusations which were the worst part of her delusional nightmare. After three months she had recovered enough to recognize in a bewildered sort of way that she was being discharged and was to return to the parental care. She recovered completely and is now reestablished as a teacher and is happy in her work.

A young man of good family and social standing, a graduate from a medical school, greatly desired to pursue his studies abroad. There were difficulties, but finally he went to Japan and began study preparatory to entering the university. Then came the Korean independence movement. The young man was arrested by the Japanese police. Later he was released and returned to Korea, but was deeply chagrined and put to shame before his fellow patriots to find that his father was continuing as a civil servant in the Japanese Government employ in Korea. The breach widened, and the youth, who had been marked by his docility, came into open revolt against his father. Study was abandoned. Meanwhile high hopes of national independence had been dashed to the ground. No purpose claimed his life, and meaning had gone out of its happenings. He went from bad to worse, at first excited, later apathetic. For eight years he was a mental derelict. During three of these years he was an inmate of a Korean hospital and for two years of a government mental hospital. He would sit solitary and idle all day long; no books were read, no conversation was attempted. The habits became pathological, with catatonic grimacing and often shameless onanism. I saw him, attempted some approach, but soon concluded that the case was hopeless and left instructions for his discharge. In spite of the hopelessness of the situation the family decided to leave him in hospital, not for treatment, but for care with a keeper-nurse. I spent long hours with the man; often he would not respond even with a monosyllable to my advances. Nevertheless, in spite of his apparent inability to attend to what I was saying, I told him simply and persisted in telling him that his trouble was not of body or brain origin, but that it was due to unsolved problems in mind and soul, and most of all to his loss of purpose and his failure to discern any meaning in life. I told him he could be cured. I based that favourable prognosis on my general view of life and of mental disease. Slowly he began to awake from his long nightmare of eight years. He copied out stories in English and Korean. He wrote spontaneously a few couplets, expressing himself in the complicated medium of the Chinese ideograph arranged in the artistry of remembered verse. It is deeply significant, confirming, I think, suggestions of the essential place of loss of purpose in schizophrenia, that the theme of this first poetry was of "the empty hands with which man comes and goes", "the falling leaves of autumn" and "the unlit shades of evening". I wish I could record a recovery. The parents withdrew him when no further progress was manifested. I have since lost touch with the case.

Even this measure of improvement is significant and encouraging.

Of paranoia, which, according to accepted definition, is incurable, I cannot bear testimony to improvement in well established cases. Where cases were early and some benefit seems to have been derived, the diagnosis may be questioned.

STERILIZATION OF THE UNFIT.[1]

By PAUL G. DANE,
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THE subject of the sterilization of the unfit is so huge, and presents so many different aspects for consideration, that unless some attempt at a division into different categories is made we might become easily confused in the many ramifications that beset its study. I therefore propose to consider the subject under four headings, as follow:

1. The unfit: Who are they? Why are they termed unfit? What does the term really connote?

2. Do the unfit constitute such a grave menace to society as many would have us believe?

3. Is unfitness genetically determined, and, if it is, would sterilization rectify the problem?

4. What are the alternatives to sterilization of the unfit? Can we propose any measure which would

[1] Read at a meeting of the Victorian Council for Mental Hygiene on December 4, 1935.

lead to a general uplift in human health and an increase in human mental endowment?

Firstly, in determining who are the unfit, it will serve our purpose if we reserve the term unfit to those who are mentally unfit.

If we except such well-defined clinical conditions as idiocy and imbecility, we must recognize that the term mentally unfit is a legal or sociological one. It is not a term that defines a well-marked clinical entity, but one which clinically covers a group of disorders of social behaviour.

A person is declared unfit who is unable, because of some mental defect, to fit completely into or find a useful place in the society into which he happens to be born.

It is thought by many that the unfit are increasing, and no doubt that is true. It is equally true that the unfit will continue to increase, because not only are our means of determining unfitness increasing in range and accuracy, but because, and chiefly because, the economic pressure in society is becoming greater and the economic criteria are ultimately the criteria by which fitness or unfitness is judged in the social group.

The problem is thus one of the lack of power in economic adaptation and social integration.

A hundred years ago the unfit were not so numerous, as far as we can ascertain, as they are now. Far back in history and literature we have the village idiot, an individual who at all times was unable to adapt himself economically. But, with exception of this individual, we know that in the more simple economic life of former times, before the urbanization of the population had reached anything like its present state, and when industries were largely cottage industries, and before much ill-considered industrial legislation had laid a heavy toll on society, each found his place in the social group, and tasks were naturally graded to the fitness of the component members of the group.

The growth of population, the enormous mechanization of industry, combined with many legislative enactments that tend to hinder employers in their free choice of workers, have combined to raise the "standard of fitness", and thus help in the creation of a class of unfit.

We find in times of stress that numbers of workers are unemployed. Economic crises are becoming more frequent and more intense; so noticeable is this that economists plot curves and predict periods of future stress *et cetera*. Each crisis sees more and more workers unemployed, and for the most part these unemployed are the least efficient—employers of labour are forced, in time of stress, to get rid of the least efficient.

It is clear that if society continues to function under the present economic conditions, many of those whom we now classify as unemployed will in the future be grouped as unemployable—as unfit. They will be unable to adapt themselves economically in a society in which economic pressure will be more intense than it is at present.

The term mentally unfit is therefore a socio-economic one. It is easy to define the base limits of the group of unfit, but impossible to define the upper limits, because the upper limits are not fixed, and vary with the criteria of social behaviour demanded by the group and the pressure of economic forces.

Even the clinical determination of the upper limits of unfitness is arbitrary, for the unfit shade off in a normal curve of general intelligence. There is no sharp line of demarcation possible even with intelligence tests—between the upper limits of unfitness and the lower limits of fitness the curve of general intelligence in the population is continuous, not discontinuous.

It is thus difficult to see where such a procedure as sterilization is going to end. Some of those regarded as fit today may in a generation be regarded as unfit and come within the ambit of the sadistic reformer, until the operation of sterilization becomes as commonplace as the removal of tonsils, and the human spermatozoa are looked upon with as much suspicion as the streptococci.

Secondly, do these unfortunates constitute such a menace to society as we are led to believe by some who have more flair for writing and talking than for thinking? Are the mentally unfit very numerous? Are they absolutely increasing, or is any statistical increase that may be observed due to an increasing pressure of economic standards? Do they constitute a menace to society? Do they fill our gaols and act as the recruiting grounds for our delinquents?

Most of those questions have been raised chiefly in America, and of course answered in that land of large headlines and large text-books by a very large yes.

In England only about three per thousand of the population are totally unable to earn their living owing to mental defect.

Surveys taken in England show that somewhat less than 1% of the population is mentally defective according to modern standards.

Dr. Ernest Jones's estimate for Australia in 1929 was about 2% of school population; or about 0·4% of the general population could be classified as mentally defective. Supposing we say that 1% of the general population is mentally unfit, is that a very large group in human society? Could we not find groups of those with physical defects much larger than that? The War revealed the startling fact that 20% to 30% of the population did not reach a really decent standard of physical equipment.

Most medical practitioners, I feel sure, would agree that the problem of the physically unfit is, in magnitude, as great as, if not greater than, that of mental unfitness—the toll of tuberculosis, of arthritis in its different forms, of diabetes and of general constitutional weakness far exceeds that caused by mental defect. It was largely from America also that the cry arose that mental deficiency was a major factor in delinquency. Scare statistics from that land of large figures showed that up to 50% of delinquents were mentally defective. If that term is used in a broad sense, it might even be true that 100% of delinquents are defective, that is socially defective, in some way unable to integrate themselves in the social group. However, in the more restricted sense in which we are using the term, that of specific defect

in general intelligence, more carefully compiled statistics in England place the number of delinquents of subnormal intelligence between 5% and 10% of all delinquents.

East, one of His Majesty's Prison Commissioners, and a man of great experience, states that only 3% of all delinquents are mentally defective.

Dr. Phailthorpe, in her survey of a limited number, found 15% of delinquents to be defective; and Professor Burt, 7%.

We thus see that from the point of view of absolute numbers and from the percentage of delinquents derived therefrom we cannot frame a very grave indictment of the mentally subnormal group.

We can again look at this problem from another angle—the financial one. It has been estimated that to provide institutional treatment for all the mental defectives of school age in England would cost £12,000,000 a year. Assuming we have in Australia about the same proportion of mentally unfit, and that the cost per inmate would be the same, we could institutionalize all our mental defectives of school age for about £1,000,000 *per annum*.

Surely this is not such a vast sum when we consider that the sugar embargo alone costs us up to £7,000,000 a year; that we squander millions in bonuses, bounties and other privileges, and that in Victoria alone we have lost £22,000,000 in so-called land settlement.

I am not for a moment suggesting that we should provide institutions for all our subnormals, but am only endeavouring to show that if we did, the upkeep would not be so enormous as some would have us believe.

Another of the menaces to society attributed to mental defectives is that their fertility is prodigiously great; that they are so fecund that society, if not protected, will be in danger of general decay, or of becoming a prey to some modern Attila. The truth is that the grossly mentally defective are not capable of breeding, that it is only the defectives who approach closely to the standard of the normal population who breed to any extent.

The mentally defective person is almost always also physically defective—the sexual urge is deficient. It has to be conceded, however, that there is a group of the general population constituting about 10% of the people in large cities who have been termed the social problem group and whose fertility is greater than that of the normal population.

This social problem group is concentrated in the slums, and among them we find the wrecks of humanity, the derelicts, the physically unfit, the chronically unemployed, the delinquents *et cetera*. A moderately large proportion of this group is below the normal standard of general intelligence, but not greatly below it. However, so appalling are the conditions in which generation after generation of these unfortunates are born and nurtured that it would not only be bold, but extremely foolish, to assert that it was not their environment which was responsible, in large measures at least, for the dulling of their intelligence and for their general physical and moral deterioration. In conditions such as exist in the slums of the old world we see exemplified the impossibility of separating into categories heredity and environment. There is, as Professor Hogben says, an inextricable mixture of the two in producing this or that type of result. To be born and to live in the environment which is the lot of the submerged tenth, with continuous lack of fresh air, of sunshine, of proper food, and with all the concomitants of these, such as chronic low-grade infections, alcoholism and the hopeless despair of chronic poverty, must lead to a deterioration in germ plasm.

We know that many different forms of life have actually disappeared from the earth owing to changing circumstances. Can it be doubted that, under conditions such as exist in modern slums, and even in rural communities, the race will deteriorate, more especially in that organ, the brain, which is nature's latest achievement. Even the oldest of our organs, the germ plasm, must surely tend to degeneracy when given such an environment for some generations.

It is thus useless to talk about hereditary influences alone in such a condition as this; heredity and environment act and react upon one another as a whole—there is a complete integration of the two categories.

This leads us to the third division of these remarks: Is mental deficiency genetically determined, and if so, would sterilization of those who are unfit solve or go any way towards solving the problem? We can regard this as the crux of the whole question. It is the most important aspect of the problem that we are considering, and it is the most difficult.

An authoritative opinion upon the causation of mental deficiency in its total range cannot be given by any one, and to discuss fully the part played by hereditary influences requires the knowledge of one highly trained in genetics, and there are few such men. It is a common saying, and largely true, that like breeds like; but it is another matter to assert that because no definite cause can be found for a condition such as mental defect, it must be hereditarily determined.

The report of the Mental Deficiency Committee of the British Medical Association, 1932, states:

> In the causation of mental deficiency heredity plays an important part, but the evidence before the Committee does not allow the expression of an opinion as to the exact percentage of cases which can be attributed wholly or partially to this cause.

Note that the word partially is used. This is fairly vague, but further on the Committee states:

> The term heredity as here used implies that in the ancestry of any given case of mental deficiency there has existed a morbid condition of bodily and/or mental development which may have taken the form either of mental deficiency or some neuropathic condition or some other defect or damage inflicted on one or other of the germ cells before fertilization.

It is difficult to believe that a body of highly trained medical men with Professor Berry at their head could have issued such a broad and vague definition. We see that they give to the term an implication so wide and deep that it is worthless. According to their view a defect in one of our ancestors who fought with Earl Harold or Duke William would be sufficient to determine mental defect in one of his descendants, and the ancestral defect need not have been mental.

Professor Hogben stated:

> The hereditary basis of physical variability among human beings offers problems of immense difficulty, but the reasons for this are nothing to the obstacles in the way of studying the hereditary factors concerning man's social behaviour. The extreme complexity of man's social behaviour as compared with the most complicated behaviour of animals is evident to everyone.
>
> It is therefore plain that any scientific advance into the hereditary basis of man's social behaviour must be slow—that zeal for corporate action must be restrained by patient inquiry into facts which can be ascertained.
>
> It is futile to talk of characters as being hereditary and environmental—they cannot be classified as such—each character in the end result is an immensely complicated series of reactions between external agencies and hereditary materials. The simplest acts of man in a social sphere are the end products of a long process of social training involving an immensely complex series of external agencies.

We know very little, apart from Freudian analyses, of the early period of childhood before speech is formed; even an imbecile may display conduct of a higher degree of complexity than an ape. Differences in social behaviour can always be magnified by altering the environment. The mentally defective class may be said to be composed of people whose social development never proceeds beyond a certain limit fixed either by environmental agencies which have operated at a very early stage or by the material constitution of their genes. We must endeavour to determine which classes of mental defectives are due to the latter and which to the former, because we know that mental defectiveness is not a single entity.

It is necessary to extend our knowledge of fœtal metabolism and fœtal nutrition and to discover what aspects of a child's social environment are significant in the early formative years when the rudiments of social behaviour are acquired.

The estimates made by different authorities as to the percentage of mental defectiveness due to heredity vary enormously. Tredfold holds that 80% is due to heredity, Shrushall says 70%. Penrose studied very carefully 153 defectives; in only one-third, or about 50, was he able to come to any determination as to causation, and of this 50, 91% showed some hereditary and 71% some environmental influences. Dr. John Thompson says 85% were congenital, and in only 0·4% was the mental defect known to be produced by Mendelian processes.

It is quite apparent from those statistics that much further and more careful investigation has to be made before we can arrive at anything like an accurate determination of the number of mentally defective persons whose condition is solely due to hereditary influences.

Next let us consider the question from the genetic standpoint. The laws of Mendelian inheritance are now determined, and a study of the pedigree charts of families in which mental defect occurs proves conclusively that the defect is not due to a dominant gene, nor is it due to a single recessive gene. Any genetic basis of mental deficiency is thus due to the action of several recessive genes; the proof of this is offered by complicated mathematical formulæ, worked out chiefly by J. S. Haldane. One form of mental deficiency, and only one, conforms definitely to Mendelian laws—family amaurotic idiocy—and this is due to inheritance through a single recessive gene.

Now, is there any direct evidence that environment is a causal agent in the production of this condition? To this the answer is yes. One or two instances will suffice.

Mongolism, as is well known, occurs or tends to occur with far greater frequency after several pregnancies, and late child bearing is also a well recognized factor in the ætiology of this condition. The average period of maximum fertility is from fifteen to twenty years, but mongolism appears at an average maternal age of forty years. It is thus apparent that the ante-natal environment of the child is a factor in the production of mongolism, for the genetic constitution of a child depends upon its parents' constitution, not upon the age of those parents or the child's place in the family.

A further illustration of the effect of environment on the mentality of children is the fact disclosed in the London County Council Health Report, 1912, that aments and also superior children tend to turn up late in the family group more often than not. These facts are cited to show that it is impossible to doubt that environmental agencies have something to do with amentia.

The study of pedigrees of families is difficult, and it is especially difficult among those who think they have something to hide. I have endeavoured to obtain the pedigrees of about fifty mentally defective children. Most of them are imperfect, but as far as I have gone, I have not been able to obtain information that would lead me to conclude that heredity was a factor in anything more than half the number at the very most. The London County Council Report, 1929, discloses that only 5% of the parents of aments were themselves defective.

Faced as we are with such diversity of opinion and such paucity of facts, we must hesitate before we jump to the conclusion that amentia is due in great part, let alone entirely, to hereditary influences. As Professor Hogben states:

> Whatever genetic differences enter into the determination of such conditions, they are not likely to be understood so long as we neglect the demonstrable significance of environmental agencies in the determination of mental disorder and defects.

It is therefore incumbent upon us to act firstly upon known environmental factors such as pre-natal conditions, difficult labour, stress during pregnancy, diet *et cetera*, before deluding the public with the idea that a sharp knife and some sterile catgut will solve a problem of some social importance.

We now approach another crucial point in the discussion of this question: what could we hope to accomplish by sterilization if we decided to do the thing properly, that is in a wholesale manner, for it appears to me that nothing less than wholesale sterilization would accomplish anything.

Geneticists have been able to calculate accurately what would happen in certain types of hereditary conditions if all the victims of these conditions were sterilized; the results are not very hopeful for those who would wish to eliminate amentia by this means.

Take, for instance, albinism. Albinism is determined by a single recessive gene. If sterilization of all albinos were carried out in every generation,

it would require about 2,000 years to reduce the incidence by half of its present number.

Another condition, Lever's hereditary optic atrophy, is due to a single recessive gene of a different type. If every person subject to this disease were sterilized, all the females could be eliminated in one generation and the incidence in the males could be reduced by 50% in each generation, so that it would take a considerable number of generations to obliterate this disease.

The elimination of any trait determined by several recessive genes, probably of different kinds, would necessarily be more difficult and infinitely more prolonged than in either of the two types of disorder before referred to. Very complicated calculations have been made, and it appears that it would take a very long time to eliminate all mentally defective persons, if indeed it was ever possible to do so.

Professor Agar has supplied me with some figures relating to this. If the incidence of mental deficiency was 100 in 10,000, and sterilization was commenced, we would find that after the first generation there would be 83 per 10,000; after next generation there would be 69 per 10,000, and after next generation 60 per 10,000. Thus it would take about one hundred and thirty years to reduce the incidence from 83 to 60. As time went on the elimination would become progressively slower. I have seen no figures which purpose to foretell how long it would take to eliminate a condition of such complexity as amentia; probably even the mathematicians hesitate before the immensity of the task.

But so far we have considered the elimination by the process of sterilization of the actually unfit. We have not taken into account the problem of the carriers. It is calculated that there are ten carriers to every mentally defective person. So that for sterilization to be of any real use, it would be necessary to rope in all those carriers and do some surgery on them. Certainly the surgeons would be busy, and the hospital problem would not be solved for thousands of years.

In Victoria alone we would have to sterilize about 200,000 people to do the job properly. C. Burt estimates that one-fifth of the population of England would require to be operated upon. A task so immense might well frighten super-socialists like Lenin and Stalin, or dictators like Hitler, but it appears not to frighten some well-meaning people in this country and elsewhere. I do not think it is necessary to say more about this aspect.

The fourth and concluding section is to consider: Are there any alternatives to sterilization?

Personally I have nothing to say against sterilization as such—it is carried out now for certain reasons, and if people desire to be sterilized I would not put obstacles in their way. Let them have it done if they so desire; but there are reasons for opposing the legislative enactments of laws regarding sterilization.

The first of these reasons is that there is a constant tendency inside the halls of legislature, and to some extent outside them, among the public, for compulsion to be used. I have little doubt that the advocates of eugenic sterilization are, in their own minds, aiming ultimately at making any such laws compulsory. In fact, if they have not this in mind, it is difficult to see what they hope to accomplish.

There is a tendency all over the world to pass laws restrictive of human liberty. Everywhere people call out for State control of this and that, and I am firmly of the opinion that the making of such laws is not for the good of human society. We cannot make people good or prosperous, or mentally fit, by legislation. Evolution has taken place through constant struggle for freedom, and the leaning of people on the State for all manner of help and for all manner of restrictions on their own freedom is the way to gradual deterioration—to retrogression, not to progression.

The second reason that I see for opposing sterilization is that it would lead many people, perhaps even the majority, to think that we had accomplished something, that we were well on our way to solving a social problem of some importance, and that in an appreciable time the unfit would be eliminated. I have shown how vain such a hope would be.

This cry for sterilization I regard as one of the many spurious remedies put forward for human betterment; it is one of the many catch-cries that come and go. But many are deluded by these cries; time is wasted, and people's minds are diverted from real reforms.

It is not always a good thing in any discussion to rely upon the pronouncements of men, however high they may rank in their particular profession; but at the same time the opinion of leaders in science must be taken into account. It is therefore not without some significance that one of the world's leading geneticists, Professor Hogben, and one of the world's most learned physiologists and philosophers, Professor J. S. Haldane, declare that in attempting to solve the problem of the mentally unfit we should and must deal with environmental factors first.

The chief of those factors is poverty. We have in all countries a large proportion of people who are born, who live, and who die in a condition of chronic poverty; the so-called submerged tenth form a large section of these unfortunate people. It is surely the duty of society to endeavour to elucidate the causes of poverty; especially is this so when we see, side by side with poverty, the ostentatious display of riches greater than in any other period of the world's history.

It is not my intention to discuss here the causes of poverty, but social inequality must be studied. In fact, the social sciences are the chief sciences, and medical men particularly should give some attention to social problems.

I believe that the solution of our problems is a comparatively easy and simple matter, but it is not to be brought about by the passing of more and more laws regulating and restricting man's liberty. Such freedom as we possess has been bought with a price—there has been pain and sacrifice to give us what we have—and yet all over the world sophistry is employed to delude people into giving up some of their liberty.

The problem briefly is to give each child a fair field and no favour from its birth. Privileges and the

granting of privileges must end. When this has been accomplished each individual will be enabled to stand on his own feet, and a race of men will gradually evolve, sturdy in body and strong in mind. The natural process of evolution, biological and sociological, will be allowed the play of their natural forces, and progression, not retrogression, will ensue.

We have today progression no doubt, but it is accompanied by great retrogression, and for many life is a hopeless problem.

Given a just distribution of wealth poverty will disappear, and with it will also disappear many of the problems of deterioration and disease. Poverty not only leads to disease of the body, it saps the very soul of those engulfed in its meshes. There is a slow mental and physical deterioration which is not necessarily hereditary, but which is nevertheless progressive from generation to generation.

To sterilize people nurtured in such environment will not eliminate unfitness—it may even, perchance, increase it. It is not sterilization of the human being, but an understanding of his faulty environment that will lead to an uplift of humanity.

A FURTHER CONTRIBUTION TO THE STUDY OF THE HEREDITY OF BLOOD GROUPS IN AUSTRALIAN FAMILIES.

By EVA A. SHIPTON,
Sydney.

THE following twenty-nine families, with forty-nine children, comprising one hundred and seven individuals, were collected during the routine typing for blood transfusions over a period of twelve months. The families are representative mostly of the class which forms the practice of the private pathologist, and only a few were collected from public hospitals.

In all cases efforts were made to secure every member of the family concerned. The technique and methods followed in previous work[1] were again used. Family 14 is interesting, showing how easily mistakes may arise. The father, belonging to Group B, needed a transfusion; the mother belonged to Group AB, and of the three donors, all introduced as sons of the father, one was found to belong to Group O and two to Group A. Careful inquiry revealed the fact that the son belonging to Group O was not the child of the woman (Group AB), but was the son of the father and another woman.

The question of the possibility of an AB parent having an O child is still under discussion, and Weiner[2] considers that non-conformity to the law "that a parent belonging to Group AB cannot give rise to a Group O child and a Group O parent cannot give rise to a Group AB child" should perhaps only be considered strong evidence that paternity is unlikely.

Family 15 is noteworthy, as the child belonging to Group O was a baby forty-eight hours old suffering from *melena neonatorum*, with both agglutinins strongly developed, so that the blood of the father, Group A, could not be used for transfusion. It was noted in previous work that the presence of both agglutinins in the serum of young babies is unusual.

As may be seen from the tables, the blood groups of these families show no deviation from Bernstein's hypothesis, and these results may be taken as further proof of the value of blood grouping examinations in affiliation cases.

TABLE I.

Parental Combination.	Number of Families.	Number of Children in each Group.			
		O.	A.	B.	AB.
O×O	5	8			
A×A	5	1	6		
O×A	12	12	6		
B×B	1	2		4	
O×B	3	3			
A×B	2	1	2	1	1
O×AB	—				
A×AB	—				
B×AB	1		2		
AB×AB ..	—				

TABLE II.

Number of Family and Initials.	Father's Group.	Mother's Group.	Children's Group.	Remarks.
1 Mc.	O	O	1 O 2 O	Adult sons.
2 E.	O	B	O	Adult daughter.
3 W.	B	O	O	Daughter aged one year. Both agglutinins present in serum.
4 H.	B	B	1 B 2 B 3 B 4 B 5 O 6 O	Adult daughter. Adult daughter. Adult daughter. Adult daughter. Adult daughter. Adult son.
5 P.	O	A	O	Adult daughter.
6 W.	O	A	1 O 2 A 3 A 4 A	Adult son. Adult son. Adult son. Adult daughter.
7 B.	A	A	A	Adult daughter.
8 B.	O	A	1 O 2 O	Adult sons.
9 B.	A	O	1 O 2 O	Baby aged one year. Girl aged three years.
10 S.	O	A	A	Baby girl aged five weeks. No agglutinin in serum.
11 A.	O	O	1 O 2 O	Boy and girl aged six and eight years.
12 A.	A	A	1 A 2 O	Adult sons.
13 P.	A	B	1 B 2 O	Twins (girl B, boy O).
14 L.	B	AB	1 A 2 A	Adult sons.
15 S.	A	O	O	Baby aged two days, with both agglutinins present.
16 H.	A	A	1 A 2 A	Boys aged about ten and twelve years.
17 L.	O	A	1 A 2 O	Both adult sons.
18 O.	A	A	A	Boy aged three years.
19 W.	B	A	1 A 2 A 3 AB	Adult daughters.
20 P.	O	A	O	Adult daughter.
21 D.	O	A	1 O 2 A	Adult sons.
22 B.	O	O	1 O 2 O	Adult daughters.
23 W.	O	O	O	Baby aged six week, both agglutinins present.
24 M.	O	A	1 O 2 A	Boys aged about ten and twelve years.
25 R.	O	O	O	Baby aged three days. No agglutinins present.
26 B.	O	A	A	Daughter aged nine years.
27 S.	A	A	A	Adult son.
28 E.	A	O	O	Adult son.
29 L.	O	B	O	Daughter aged ten years.

Acknowledgements.

I have to thank Dr. J. E. F. Deakin for help in ascertaining the truth about Family 14, and also those colleagues who at various times have assisted me in obtaining all the members of a family for blood grouping.

References.

(1) Eva A. Shipton: "A Contribution to the Study of the Heredity of Blood Groups in Australian Families", THE MEDICAL JOURNAL OF AUSTRALIA, March 2, 1935, page 273.
(2) Alexander S. Wiener: "Blood Groups and Blood Transfusion", 1935, page 191.

Reports of Cases.

TWO CASES OF SPÄTAPOPLEXIE: ONE RECOVERY, ONE DEATH.

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AND

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IN the condition of *Spätapoplexie* described by Bollinger in 1891, subcortical vessels are involved in post-traumatic cerebral softening or œdema and in consequence hæmorrhage takes place into the brain substance. Secondary rupture into the ventricle frequently occurs and many of these cases prove fatal. *Spätapoplexie* occurs in probably less than 1% of all cases of cerebral trauma admitted to hospital; but the condition is an important one, since it may occur in mild or moderate degree of injury to the brain, and may in addition be precipitated by the most cautious attempts to relieve increased intracranial tension. The following two cases serve to illustrate these observations.

Case I.

R.K.,[1] a man aged forty-one years, was admitted to Lewisham Hospital on June 5, 1935. He had been involved in an automobile accident, and on admission was conscious and well orientated and responded intelligently to questioning. Anterograde amnesia was present, the systolic blood pressure was 118 and the diastolic pressure 80 millimetres of mercury, the pulse rate was 84, and examination of the nervous system disclosed no abnormal physical signs other than a pin-point pupil on the left side. Radiographic examination revealed the presence of a fissured fracture, arising in the region of the posterior clinoid processes and running upwards through the right frontal bone as far as the right fronto-parietal suture. There was no depression of bone. There was also a fracture of the left acetabular cavity and one passing through both the left and the right upper and lower rami of the pubes. The alignment of the pelvic fractures was satisfactory.

During the first twelve hours after admission incontinence of urine was present and it was necessary to catheterize the patient's bladder. On the second day a mixture containing 8·0 grammes (two drachms) of sulphate of magnesia was exhibited three times a day and convalescence was quite uneventful during the next fortnight, except for occasional occipital headaches. On awakening on the morning of June 19, 1935, he informed the sister that he was paralysed on the left side. On examination a flaccid paralysis of the left arm, face and leg was discovered. His left cheek was blown out during speech. Tendon reflexes were absent and the left plantar response could not be elicited. There was a complete loss of deep sensation at the left hand and foot, with astereognosis at the left hand. The mental state was alert and anxious. No disturbance of bladder or bowel function took place. The details of recovery are not of particular interest here, and it may be recorded briefly that a progressive recovery of power and deep sensibility followed during the next four weeks.

The patient, who is an artist, and an intelligent man, now reports an almost complete recovery of power both in the arm and leg. He is conscious of some impairment of fine movements in the left hand. There is now no disturbance of deep sensation and the left plantar response is flexor.

Comment.

The main interest of this case lies in the fact that intracerebral hæmorrhage took place while the patient was asleep fourteen days after a relatively mild cerebral trauma. This fact at once puts one on guard against the condition and emphasizes the necessity for prolonged rest in bed after cerebral trauma. The hæmorrhage must necessarily have been small and the transient motor and sensory defects, which were extensive and due, therefore, to a subcortical lesion, may be considered to have been the result of cerebral œdema surrounding the intracerebral clot.

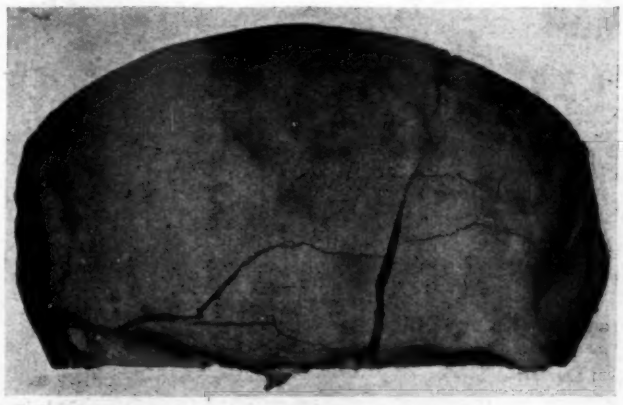

FIGURE I.

Case II.

M.B., a male, aged twenty years, was admitted to Lewisham Hospital on January 12, 1936, suffering from acute cerebral trauma. On arrival at hospital he was unconscious, but recovered consciousness soon after admission. On examination he was found to have a lacerated wound on the left side of the forehead and extensive orbital hæmatomata; he was bleeding from both nostrils. The pulse rate was 70, and the systolic blood pressure was 100 and the diastolic pressure 45 millimetres of mercury. A mild degree of shock was present and he was rather irritable. No abnormal neurological signs could be detected. During the first twelve hours after admission he vomited seven times. Twenty-four hours after admission he was quite conscious, cooperative and well orientated. As the blood pressure and pulse were then normal, thirty cubic centimetres of 50% glucose solution were injected intravenously. This injection could not be repeated owing to the minute

[1] This patient was presented before a meeting of the New South Wales Branch of the British Medical Association on October 30, 1935.

size of the veins in both arms. During the next five days the patient improved progressively. A mixture containing 8·0 grammes (two drachms) of sulphate of magnesia was exhibited three times a day, and on January 18, 1936, owing to mild persistent headaches, it was decided to examine the cerebro-spinal fluid by lumbar puncture. The cerebro-spinal fluid was clear and the pressure was 250 millimetres of water (150% increase). The pressure was cautiously lowered to normal and the headache which previously had been present now disappeared. During the next four days the patient was well, but occasionally complained of headache, and on January 22, 1936 (eleven days after his admission to hospital), it was decided to repeat the lumbar puncture. The cerebro-spinal fluid was again found to be clear and under a pressure of 200 millimetres of water. This was cautiously lowered to 130 millimetres. Eight hours later he collapsed suddenly, became cyanosed and unconscious and his respiration ceased. The right pupil was myotic, there was a flaccid paralysis of the right arm and leg, and the right plantar response was extensor. The pulse was good and respiration was restarted by artificial methods.

Two hours later he again collapsed and became cyanosed. Two ampoules of "Coramine" were injected subcutaneously and continuous intranasal administration of oxygen was commenced. The systolic blood pressure was 110 and the diastolic pressure 90 millimetres of mercury; and the pulse was rapid (130) but regular. Respiratory movements had ceased and had not reappeared when the heart gradually failed and the patient died three and a half hours later.

Post Mortem Examination.—Extensive fractures of the left frontal bone were found (Figure I) involving the greater part of the orbital plate and extending across the mid-line through the cribriform plate of the ethmoid. The sphenoidal sinus was full of old blood. A small extradural hæmatoma of old blood was found beneath the site of the fracture in the left frontal bone. The left frontal lobe of the brain was œdematous in appearance (Figure II) and on elevating the brain from the cranial cavity a jelly-like clot, the size of a hen's egg, was extruded from the inferior surface of the traumatized left frontal lobe which then became collapsed. Sections of the left frontal lobe disclosed intracerebral hæmorrhage and marked cerebral œdema (Figure III). No blood could be found in the left lateral ventricle, the ependymal lining of which, however, was involved in the œdema.

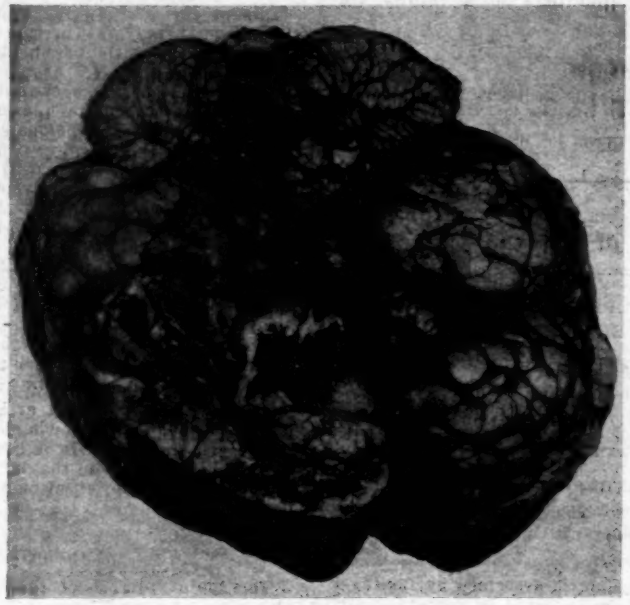

FIGURE II.

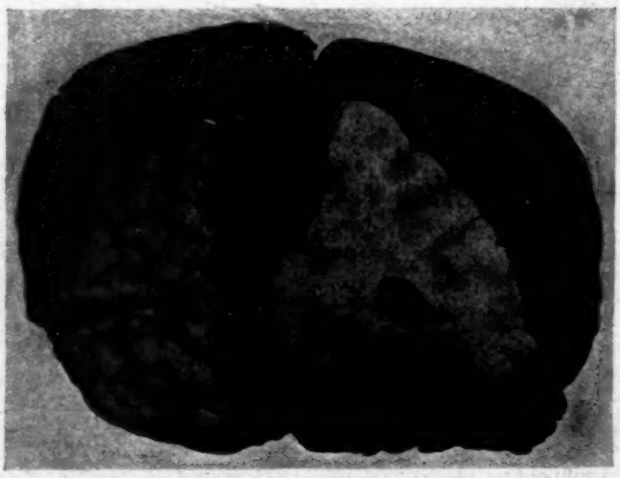

FIGURE III.

Comment.

It was a great surprise to discover such extensive cerebral trauma in a case in which unconsciousness had been of such short duration, where traumatic delirium was absent, and where the patient had been eating and sleeping well for seven or eight days. The sole complaint was occasional frontal headache, and it appears likely that before lumbar puncture the cerebral condition was one mainly of œdema in the left frontal lobe. It may be that even cautious reduction of intracranial tension by lumbar puncture was a factor in precipitating late subcortical hæmorrhage; an effect which contrasted sharply with that of hypertonic solutions of glucose, although the time at which the latter was injected may have been too early for much perivascular softening to have taken place.

Of further interest too is the fact that in the next bed to M.B. was his cousin, E.B., also injured in the same accident, apparently more seriously, for he was unconscious for seven days. In E.B. the cerebro-spinal fluid was also clear and the pressure only 160 millimetres of water. Increased intracranial tension, as many have observed, is of only secondary importance in traumatic stupor, shown here by the fact that M.B., quite conscious, had an intracranial tension of 250 millimetres of water. Lumbar puncture in E.B. dramatically relieved his stupor and was followed by no untoward results.

Acknowledgement.

We wish to thank Dr. Arthur Palmer, Government Pathologist, for his courtesy in allowing us to view the autopsy and for his generosity in presenting us with the brain in Case II.

ENCEPHALOCELE IN THE FRONTO-NASAL REGION.

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THE following case is reported because the average textbook[a][b][c][d] describes encephalocele as usually occurring in the occipital region, examples in the frontal area being of considerable rarity.

Clinical History.

H., a male quarter-caste, was born in the bed of a creek on June 30, 1935. His mother was a half-caste (aboriginal and white blood) and his father was a white man. He was admitted to the Australian Inland Mission Hospital, Hall's Creek, some five or six hours after birth in a very weak state. His birth weight was about 1·8 kilograms (four pounds); there is some probability of prematurity.

On his admission to hospital a malformation was found to be present in the form of a lump on the nose; it was very dirty and covered with sand. After being cleaned the skin was found to be broken and a serous fluid was oozing out.

Careful nursing and feeding with breast milk was instituted along the lines adopted for premature infants, and at the end of a month the baby was strong enough to withstand the transfer over 240 miles to the Wyndham Hospital, where I first saw it on July 29. The weight was then 3·07 kilograms (six pounds twelve and a half ounces).

The accompanying photographs (Figures I, II and III) give a clear idea of the location and size of the tumour.

FIGURE I.

Salient points of the examination were that there was no break in the continuity of the nasal bones at the upper edge of the tumour; no distortion could be seen

FIGURE II.

inside the nasal cavities by the aid of an aural speculum, and breathing through the nostrils was quite unobstructed; the rate of flow of straw-coloured drops of fluid from the surface of the tumour (note the suspended drop in Figure II) was increased when the baby cried. No pulsation of the tumour was observed.

The baby showed no other abnormalities of any description, and diagnosis appeared to rest between meningocele and a granulomatous syphilitic lesion. Unfortunately there were no facilities available for performing a Wassermann test.

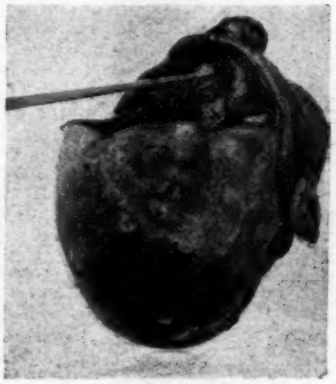

FIGURE III.

On July 31, two days after the child's admission to hospital, the tumour was tapped by running a needle subcutaneously along the cheek; two cubic centimetres of a clear straw-coloured fluid were withdrawn and an impression was gained of dealing with a loculated structure.

Three days later (August 3) it was thought that the tumour was increasing in size and that the quantity of fluid oozing from it was greater.

FIGURE IV.

On August 5 the child did not appear so well, and on the following day the exuding fluid was whitish and turbid. A stained smear of this showed numerous pus cells and short-chained streptococci. Head retraction was evident, progressing later to opisthotonus and followed by severe screaming attacks, in the intervals of which the child lay quiet and listless, refusing to suck or even to swallow fluids.

From then on it went down hill rapidly and death ensued on August 9.

Post Mortem Examination.

The frontal bones were cut away, an expanse of creamy pus that extended over both cerebral hemispheres and around to the base of the skull being exposed. When the frontal lobes were removed an extension of the brain substance was clearly revealed, passing forwards and downwards to a hiatus situated in the mid-line of the anterior fossa of the skull (Figures III and IV).

FIGURE V.

A V-shaped section was then removed, passing through the skin, soft tissues and frontal bone, and the extension of brain matter was traced down into the tumour (Figures V and VI). Between it and the overlying meninges, which could be distinctly separated from the covering skin, were numerous adhesions and further quantities of creamy pus.

This specimen is now in the museum of the Perth Hospital.

FIGURE VI.

Comment.

This case has followed the trend usually described; that is, infection from without (most probably from the needling) and the supervention of an acute meningitis. So marked is the vulnerability that the prognosis must be considered to be extremely grave. Whether a complete excision (possibly with an "electric" knife) followed by a skin graft would be a reasonable line of treatment to attempt is a question that merits serious consideration in view of the otherwise almost certainly fatal termination.

Acknowledgements.

My acknowledgements and thanks are due to the sisters of the Australian Inland Mission Hospital, Hall's Creek, for the clinical notes covering the first month of the baby's life, and to Mr. T. Crookes for his painstaking efforts in obtaining the photographs.

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(1) J. Martin Beattie and W. E. Carnegie Dickson: "A Text-Book of Pathology", Third Edition, 1926, page 965.
(2) Rose and Carless: "Manual of Surgery", Thirteenth Edition, 1930, page 821.
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Reviews.

CARDIOGRAPHY.

MOST physicians would imagine that it was quite unnecessary to add to the already large number of books, large or small, dealing with electrocardiography. Dr. Russell, of Saint Thomas' Hospital, however, has produced a booklet on this subject, which adequately covers a small gap in the area of graphic cardiological inquiry.[1] The text is particularly concise, and is in such straightforward terms as to be readily comprehensible to a layman. The whole work would pass very well as a chapter in a good modern text-book of medicine. It is, in fact, written for the medical student, who experiences difficulty in digesting the over-condensed section on electrocardiography in his large text-book and who discovers that the busy honorary physician on rounds has rarely time to discuss cardiographic intricacies with him.

Most of the first part of the book (dealing with electrocardiography) is quite properly devoted to illustrations of commonly encountered tracings. These reproductions are of a high technical order. It would be better if each curve had its own description placed immediately below it, so as often to save the reader from turning a few pages backwards to identify the curve. The early pages are devoted to simple descriptions of apparatus and the physical principles involved. The variations of the normal cardiogram, a constant stumbling block to beginners, receive suitable mention. Essential diagnostic points are stated succinctly; only changes of clinical importance are described, and the mere academic arrhythmias are omitted. Signs of myocardial involvement are divided into two groups, cardinal and associated. While barely enough significance is accorded to the enlarged *Q* wave, the value of deviations in the *R-T* segment as an indicator of toxic or coronary damage is properly emphasized. The changes which follow coronary occlusion are well described and well illustrated, though by no means every cardiographer would pay much attention to the size of the *P* wave in this condition. The author states that cardiographic changes are present in over 95% of patients with coronary occlusion. As a rule, American observers give a rather lower percentage. An important chapter, entitled "The Type of Case where an Electrocardiogram is Likely to Prove of Special Value", concludes this section of the book and for post-graduate purposes is easily the most valuable chapter of all.

The remaining pages are devoted to a concise description of changes in the form of the orthodiagram. This form of cardiography has been omitted from most English text-books of medicine, but the realization of its increasing importance will insure inclusion in future volumes. Radiological examination of the heart is not a practical possibility for most practitioners, and in any case requires no little experience in interpretation. A knowledge of gross changes and shapes in size and contour, however, is required at final examinations and is by no means a valueless burden to bear during general practice. This little volume is warmly commended to both student and general practitioner.

[1] "Essentials of Cardiography", by H. B. Russell, M.D., M.R.C.P.; 1936. London: J. and A. Churchill Limited. Demy 8vo, pp. 88, with illustrations. Price: 7s. 6d. net.

The Medical Journal of Australia

SATURDAY, MAY 23, 1936.

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FROM THE PATIENT'S POINT OF VIEW.

MEDICAL practitioners generally look at disease from the point of view of therapy; some think of its causation; some again (perhaps the majority), while seeking to cure it in one person, try to prevent its recurrence in the same person and its spread to another. It would be interesting to know how many practitioners of medicine have stopped to ask themselves what a disease really is. Many of us speak of disease as if it were an entity, something almost tangible, certainly something with a sense of direction, able to force itself on the unwary and to take its toll in life and limb of those unable to resist its invasion: "disease stepped in and decimated the community", or "disease attacked him and he died", and so on. Sometimes, in the loose jargon of the ward or of the medical meeting the disease is identified with the patient: "I thought he was a pneumonia, but he turned out to be an appendicitis"—a dignity for a disease, but a strange destiny for man. Disease should be thought of as a state, a reaction of the body to an agent such as a bacterial or other poison. In these circumstances we can think of the agent, of the way in which it arises and in which it reaches and enters the body, of the state of the body while the fight between body and agent is taking place, and of the mechanism by which the body overcomes the agent or suffers defeat. These are all matters of the greatest scientific interest, and it is by a devotion to their study that the medical practitioner justifies his claim to that title. But disease occurs in a patient—a sentient, suffering being—and it is to his point of view that we would draw attention.

The patient chooses a medical attendant in whom he has confidence, and, having confidence, he looks for signs of hope for the future. In hospital practice the patient is not always able to choose his attendant; but the public hospital patient may be just as sensitive and emotional as the private patient. The medical attendant in public hospital practice is thus handicapped because he has to begin by gaining the patient's confidence. The question of prognosis arises here, and how far the sorely stricken patient should be told the truth is too large a subject to be discussed; it will suffice to point out that encouragement gives hope and that hope is the best possible aid to recovery. The patient may be slow-going, even-tempered, unemotional and dull; he may be highly strung, supersensitive or of what is known as the artistic temperament. He may, of course, have an emotional character anywhere between the two extremes. His mentality and his outlook on life have an enormous influence on his behaviour in illness. A great deal, but perhaps not enough, has been written on the psychological component of disease and on the extent to which mental treatment or an altered outlook will hasten recovery. Of the mental component of disease the patient is not as a rule conscious; but there are many other aspects of his illness, trivial perhaps, that influence his mind, that mean a great deal to him and that should therefore be considered by his medical attendant. A great deal, for example, depends on the surroundings in which the patient is being nursed. Even if a hospital is held by common repute to be above reproach, the attendant should inquire into the day's happenings; if a nursing report is kept, he should, if possible, read it. Again, he should remember that a tired and jaded nervous system needs treat-

ment, and he should see that the patient has sufficient sleep. He would confer a boon on all hospital patients if he could do something to abolish the iniquitous habit of waking them from a sound sleep at five o'clock in the morning (or earlier) that they may be washed. Ability to sleep is reacquired with great difficulty after some illnesses, particularly after surgical operations and by those who work with their brains rather than with their muscles. Untold misery is inflicted on a patient who is sent into the country uninstructed and unprepared after a short convalescence from a major surgical operation. A medical attendant would do well if he were from time to time to look into the style of cooking of the several hospitals that he visits and to inquire of the patients, possibly in the absence of the nursing staff, whether their needs are being met. Above everything else he should abolish fear; this is called for chiefly in surgical practice. Academic discussions are held by anæsthetists on the value of premedication in anæsthesia. From the patient's point of view there seems to be no ground for argument; of course, no hard and fast rule can be laid down, but when an element of fear is present (and who can say when there is no fear), premedication by such a drug as paraldehyde is invaluable. We would go so far as to say that, even if the patient has no fear, provided there are no contraindications to its use, premedication should be adopted because of the repose and quietness of mind that it brings.

Some of the factors of illness have been discussed from the patient's point of view, and it has been stated that the medical practitioner should make an effort to understand them. He can best do this by trying to imagine himself in the patient's place. If he has himself suffered from a severe illness or watched by the bedside of someone near and dear to him, he will appreciate the references that have been made. Robert T. Morris has written with truth in his recent book, "Fifty Years a Surgeon", that no one can be "a one-hundred-per-cent. doctor" until he has himself had some serious illness or surgical operation. If a practitioner has not suffered in this way, and if he has no imagination, it is a little difficult. Of course, a man without an imagination should never be allowed to graduate in medicine, but that is another story. In the Utopia of the future preventive medicine will have advanced to such a stage that illness will be unknown. In the pre-Utopian world, however, it might be possible to make graduation contingent on the candidate's proving to the satisfaction of his examiners that he had served an apprenticeship as a patient in the hands of the specialists whose ranks he proposed to join — by that time all medical practitioners would be specialists. In the meanwhile we must rely on the remarks of rebellious patients, on the illnesses of our brother practitioners and on what imagination we may possess.

Current Comment.

THE SUPPLY OF BREAST MILK.

THERE has always been much argument about the digestibility of boiled cow's milk as a food for infants. Some two years ago, Ogilvie and Peden prosecuted some interesting investigations on the subject and described their observations on the gastric contents of babies. These contents were removed before and at half-hourly intervals after test feeds of raw and boiled milk. The two workers concluded that the digestibility of cow's milk is not adversely affected by boiling.

It is therefore interesting to read a recent communication by L. A. Scheuer and J. E. Duncan on the problems surrounding the constant supply of reliable breast milk to sick babies.[1] There is no need to labour the point that such milk is almost beyond price in children's hospitals; it is of low bacterial content, its temperature varies little from that of the infant's body, and its concentration is such that it is admirably suitable for digestion. Besides these advantages, the protein of breast milk is precipitated in the form of fine curds, while its fat globules are very small. The pH value is of the correct order and, apart from its chemical composition, the milk contains invaluable antibodies, ferments and vitamins. For these and other reasons a lower mortality is to be observed among breast-fed than in artificially fed infants.

The one perfect substitute for mother's milk is that of a wet nurse, and for the past sixty years wet nurses have been used as foster mothers at the New York Foundling Hospital. But here, as elsewhere, there has always been great difficulty in maintaining a supply necessary to meet a greatly fluctuating demand. Since breast milk is essential in the treatment of premature and marasmic children, the English pædiatrician G. F. Still once

[1] *American Journal of Diseases of Children*, February, 1936.

suggested that daily collections of breast milk should be made from a number of mothers. About a decade ago attempts were made to preserve such milk by the use of a modified roller process, as was an effort to introduce the practice of freezing for the purpose. Both these plans proved unworkable. In 1925, also, B. R. Hoobler reported an attempt made by the Detroit Bureau of Wet Nurses to commercialize the production and distribution of mother's milk (see THE MEDICAL JOURNAL OF AUSTRALIA, March 28, 1925, page 321). The scheme, while likely to be useful, did not appear to be commercially sound.

About this time it was discovered that the heating of breast milk to a temperature of 150° F. did nothing to prevent the appearance of bacteria in the treated samples; pathogenic organisms were regularly found within a period of two weeks. The device was also tried of boiling collected breast milk in pans for periods of thirty minutes on three successive days, a procedure which was invariably followed by the development of a heavy and unattractive scum.

In 1933 it was demonstrated that if the milk were heated to 175° F. for half an hour on three consecutive days, it would "keep" indefinitely under conditions of proper refrigeration. This meant that a safe supply of breast milk, to be drawn upon when required, was always available. The method of heat treatment now used by Scheuer and Duncan is worthy of a brief description. Into each of several eight-ounce bottles are poured seven ounces of unpasteurized breast milk and half an ounce of sterile water. Corks are lightly inserted into the bottle necks and covered with cotton wool, gauze and a paper cap secured in place by means of a rubber band. Placed in racks, the bottles are immersed in cold water, which reaches the level of their contained milk. The water is now heated to a temperature of 175° F., which is maintained for a period of thirty minutes. This process is repeated in twenty-four hours and, for the last time, at the end of forty-eight hours. In the intervals between the application of heat the bottles remain at room temperature. As a concluding step the bottles of milk are sealed with paraffin and the whole stock is stored in a refrigerator at a temperature of 38° to 52° F.

Attempts to make bacterial cultures from samples of human milk thus treated have proved that such samples have remained sterile for two years; and an interesting fact is that the fæces of infants fed upon such milk contain precisely the same bacterial flora as those of children nourished with fresh breast milk.

During two years Scheuer and Duncan were responsible for the feeding of 125 infants with pasteurized human milk. Of these, 61 were premature, 11 marasmic, and 53 were the subjects of malnutrition. In the whole group there were 23 deaths, but in no instance could death be attributed in any way to the diet. In the time spent under treatment the children consumed the amount of 48,330 ounces of the milk. It is noteworthy that at the end of the second year a chemical analysis gave similar values for the pasteurized breast milk as those of milk drawn freshly from the mother. In view of these generally satisfactory results, it would be a matter of great interest to learn whether any Australian pædiatricians have made use of the method in infant feeding.

THE PROBLEM OF EMBRYONIC ORGANIZATION.

BEFORE the introduction of experimental methods into embryology, the development of the embryo was regarded as a fixed process, a marvellously complex but unalterable ritual by which a set of preexisting latent characters was made evident. It was believed that the manifest increase in diversity and complexity which could be observed during development was more apparent than real. Recent work has altered the point of view of the embryologist as fundamentally as relativity has altered the point of view of the mathematician. "Ever since the introduction of experimental methods into embryology the strictly preformistic conception of development has been losing ground" writes Paul Weiss in a review which must prove of extraordinary and absorbing interest to anyone who cares to take the trouble to read it.[1] To the imaginative reader it conveys the impression that embryologists are on the brink of tremendous discoveries. He will catch glimpses of a world in which the factors which affect the process of development are understood and may even be controlled. Those of a more practical and critical turn of mind will realize that the theoretical discussion overshadows the facts on which it is based. Weiss himself admits that the framework by which he tries to give the facts a meaning is "for the most part still a fragmentary, largely hypothetical scaffolding".

The experimental facts, however, are of extraordinary interest, and it seems worth while quoting some of them for the benefit of those who were taught embryology more than ten years ago. There is apparently no doubt that each part of a developing embryo possesses more potentialities at an earlier stage than would be found in it at any later stage.

Amphibian blastulæ, at a stage when the cells do not yet show any marked differentiation, were cut up into small fragments containing a number of cells each; thereby the fragments are released from whatever specific influences and interrelationships might have been operating in the intact system. The fragments were reared in an unspecific environment ("interplantation" into the orbit of the eye, or "explantation" into salt solution). Careful work had been done to map out the fate of the various areas in normal undisturbed development. It was found that the actual differentiation of the pieces reared in organic media, in some cases, deviated considerably from their predicted normal fate. Cells, for instance, that normally would have formed part of the skin epidermis could differentiate into nerve cells, muscle cells, notochord cells, cartilage cells, etc., more or less chaotically.

[1] *Physiological Reviews*, October, 1935.

The fact to be emphasized is that at the time of isolation those cells did not yet have a definite irrevocable destination. It is interesting to read that the fragments do not all show the same degree of indeterminacy; there are certain areas the cells of which never give rise to anything but what they would have produced in their normal course. The time factor comes in here. If those areas which in the earlier stage were found to be still capable of a considerable variety of differentiation, are isolated at a somewhat later stage, they invariably tend to develop in the one direction that would have been their fate in the normal germ. For instance, materials that in normal development would form the eye will go very far towards producing an eye even after being isolated from the rest of the embryo, and this has been called "self-differentiation"; but they will do so only provided they are isolated at a sufficiently late stage; at an earlier period the same materials will be found in the state of indeterminacy described above.

The ability for self-differentiation is, then, acquired only gradually. How is it acquired? On what does it depend? How do the cells receive final assignments to their destined ends? The process of transformation has been called determination, and while there is abundant experimental evidence to show that there are real events and effects behind what we call determination, we are still very much in the dark concerning their nature and operation. The problem is usually stated as if there were only two alternatives: (i) The material may contain several different potentialities, when determination would work simply by releasing or activating one of them and suppressing the rest. (ii) The material may have no tendencies of its own; then determination would mean active instruction from other parts of the embryo, imposing organization upon such unorganized material.

Weiss envisages at least five different component processes: growth, cell movement, cell differentiation, emancipation of parts from the whole, and functional and correlative adaptation. Under experimental conditions any one of these component processes can be obtained without the others, and only under the particular conditions of normal development are they so well coordinated with and superimposed upon each other that a perfectly harmonious performance results. In some experiments with material grafted at the indeterminate stage it seems that this graft is moulded passively by its new position. For instance:

> Ectodermal cells that normally would differentiate into part of the skin were transplanted, during the gastrula stage or earlier, into the region where later the central nervous system will develop; it was found then that such transplants develop in accordance with the characters of their new location, i.e., they participate in the formation and differentiation of the neural system.

Other experiments, where the grafted material and the host were of different species, are of extraordinary interest. There are, it appears, two kinds of amphibians, known as anurans and urodeles, and these creatures differ considerably in the type of their head organs.

> The main distinguishing features are the suckers and the horny jaws in the anurans and the balancers and teeth in the urodeles used. Indifferent ectoderm, taken from the trunk of an anuran gastrula and grafted over the prospective mouth organ of a urodele germ, was observed to participate in the formation of the head and the mouth of the host, but in doing so was seen to produce suckers and horny teeth, head structures of the donor species, strange to the host. In other words, the grafted material has been responsive to the local organising urodele instruction, but has obeyed them in its own anuran way.

Results like these have shifted the emphasis back to the responding material. These two sets of experiments illustrate the problem of experimental embryology for the past fifteen years. During this time it has wavered between the alternatives that may account for the growth of these grafts. Are they "activated" by potentialities within themselves or are they "instructed" by the surrounding material? Out of this uncertainty has arisen the work dealing with the so-called "organizer". There is, it would appear, one area in the developing embryo which achieves "self-differentiation" ahead of all the rest. This is the section of the blastula which during gastrulation is invaginated around the lips of the blastopore into the interior and there forms the ento-mesoderm. If any of this material is isolated, it insists on differentiating in its own way. In the strangest location it displays attempts at invagination, and its cells inflexibly pursue their destined growth into notochord, muscle or pronephros. Not only does this area early acquire self-differentiation; it also acquires a marked capacity for exerting organizer effects on surrounding tissues; and so to the "organizer district" embryologists have tentatively assigned the rôle of being the primordial centre from which organization is dealt out to the rest of the germ. During gastrulation this organizing power is parcelled out to the various districts of the embryo, making self-governing colonies of them. From the first description of the activities of a so-called "organizer" in 1924, work on this subject has led by a straight road of experiment and reasoning to some fascinating results obtained recently by a number of workers, suggesting that the principle to which the "organizer" owes its effects may be a well-defined chemical substance.

Weiss traces the path by which this conclusion has been reached. It seems that the influences exerted by tissue grafts are of a double nature. First they activate surrounding tissues in some way, so that the tissues begin to respond to whatever organizing field activity lays claim over them. This may be the activity of the host field or it may be the activity of the grafted field, provided the graft is living tissue. Only in this second case does the graft come in with the second sort of activity, with specific organization, contrasting with its former unspecific activation. Now it has been found that not only living tissue but dead tissue can initiate a growth process. Further, not only embryonic tissues can be used, but many adult tissues are equally effective, some in the living as well as in the dead condition, others only after having been killed. It seemed a promising task to

attempt to isolate the active principle involved, and successful results have been obtained with tissue extracts. The activating principle, apparently a definite substance, can be extracted, although only slowly, by chemical solvents and is not destroyed by moderate heat (145° C.). Are these workers, then, about to confront us with a chemical substance that can actually produce living tissue? Disappointingly, no; the substance is merely an "activator", not an "organizer". The work that defines its nature admits its limitations. The effects of living "organizers" and dead "inductors" are essentially different. Dead inductors merely activate, while live embryonic tissues both activate and organize. "The inductive principle seems to be as loosely connected with its product as the kindling spark is with the pattern of fire-works". And even if this inductive principle is demonstrated to be carried by a chemical substance, this cannot in any sense be taken to mean that organization also is brought about simply by a number of diffusing chemical substances.

The problem of organization is left as obscure as ever; if anything, it has possibly been shifted a little. Nature guards her secrets closely and the substance of life eludes the most patient of chemists. The organizing principle of growth seems to be within his test tubes, but when it is patiently analysed it is still not quite what he was looking for, and the real solution of the problem is as far off as ever.

> Those shaken mists a space unsettle, then
> Round the half glimpsed turrets slowly wash again.

However, the patient, laborious, disinterested search for truth goes on. Weiss regards tissue culture as a most promising method, provided it is critically handled. Well developed mechanics of tissue and organ formation are very urgently needed, in order that eventually we may be enabled to abandon the use of symbols in favour of knowledge.

NICOTINE.

A good deal of vague and confused thinking surrounds the subject of tobacco smoking, for tobacco is a poison of which the effects vary so much with the individual concerned that reliable evidence is difficult to obtain. Experimentally, nicotine will produce degenerative processes in the blood vessels of animals and has so been blamed for its part in causing arteriosclerosis in man. It may well be that in persons predisposed to the development of vascular disorders of the kind, excessive smoking hastens the onset of the disease and is a factor associated with the appearance of *angina pectoris*. Yet countless thousands of apparently healthy men and women consume immense quantities of tobacco for many years; and in certain parts of Central and South America, where people of all ages and both sexes smoke long, strong, green cigars, arteriosclerosis is very rare. In the past much nonsense has been talked by the advocates and the enemies of smoking. The plain truth is that, as in matters relating to athletics, drinking and amour, the smoker's motto should be: *"Ne quid nimis."*

The general opinion of toxicologists is that the lethal oral dose of nicotine varies between 30 and 60 milligrammes. A German authority affirms that one mild cigar or five cigarettes contain enough of the alkaloid to kill a man. Fortunately, nearly 90% of this amount is exhaled in smoke or can be recovered from the "butts".

At first sight the silence of most text-books on the subject of acute nicotine poisoning and its effective treatment seems strange. Cases of death from such poisoning, either accidental or suicidal, are rare, but one such instance was reported in the columns of the Australian press a few months ago. In the pages of "Taylor", too, may be read the story of a Sydney woman who died in the year 1902, twenty minutes after a quack had administered, as a remedy for constipation, an enema consisting of an ounce and a half of strong tobacco in a quart of water. Perhaps in this tragedy, as in others, the quick onset of symptoms and the great probability of early death have prevented the development of a fixed technique in treatment.

F. E. Franke and J. E. Thomas[1] have recently published some important observations embodying research into the treatment of acute nicotine poisoning. Their work began with the major premise that, in the laboratory, animals given what would otherwise be a fatal dose of nicotine may be kept alive by means of artificial respiration. The method has commonly been used on cats, rabbits and dogs. In their experiments Franke and Thomas employed fifty-two dogs. On these animals artificial respiration was carried out by means of an interrupted current of compressed air, delivered either through a tracheal tube to the anæsthetized subjects or beneath an air-tight face mask to those unanæsthetized. In addition, the dogs' hearts were massaged, either directly or indirectly, and intracardiac injections of epinephrine were given.

Without presenting statistical details, it may be said that the results of the experiments indicate that artificial respiration was invariably successful if performed before failure of the circulation was evident and if continued until muscular paralysis had disappeared. The use of the intracardiac injections of epinephrine and of cardiac massage was of value in the resuscitation of dogs in which both respiration and cardiac action had failed. The authors consider that prolonged artificial respiration and the intracradiac use of epinephrine are to be advocated in the treatment of acute nicotine poisoning. Such poisoning, though admittedly rare, is no slight danger in tobacco factories. These establishments should make provision for prolonged administration of artificial respiration, and directions for the treatment of poisoning by nicotine products should be given on the labels of containers.

[1] *The Journal of the American Medical Association*, February 15, 1936.

Abstracts from Current Medical Literature.

BACTERIOLOGY AND IMMUNOLOGY.

The Occurrence of Typhoidal Bacilluria in a Horse.

G. F. PETRIE (*The Journal of Pathology and Bacteriology*, January, 1936) records the occurrence of an acute typhoidal infection in a horse. The horse was a female, aged fifteen or sixteen years, being immunized at the serum department of the Lister Institute with highly virulent smooth strains of *Bacillus typhosus* which contained the Vi-antigen. A stable companion received almost exactly similar treatment and showed no sign of infection. The first immunizing course consisted of a series of doses of heat-killed bacilli followed by a series of doses of living bacilli. The total number of the latter given during the course was 62,000 million. The second immunizing course consisted of a series of intravenous doses of an extract derived from smooth bacilli which contained Vi-antigen and which had been killed by the addition of 0·2% formalin. The symptoms of the illness followed the third course, which consisted of a series of mixed doses of killed and living bacilli, the total dosage for the course being 630,000 million killed and 63,000 million living organisms, and the course was completed on December 10. Eight litres of blood were taken from the horse on December 15, and that evening the horse seemed dull, with loss of appetite and pyrexia. Blood cultures taken the next day and throughout the illness were sterile. Four days after the illness began, a specimen of urine yielded *Bacillus typhosus* on culture. The illness lasted from December 15 to January 8, and presented pyrexia, increased pulse rate, loss of appetite and wasting of muscles. The horse was anæsthetized to death on January 9. *Post mortem* examination revealed no definite macroscopic changes in any organs. Cultures from the kidneys, medulla and cortex yielded pure *Bacillus typhosus*, while those from the liver, spleen and lungs were sterile. It is noted that the pathogenesis of the condition, that is, interception of bacilli that are circulating in the blood stream within the tissues of the kidney with the excretion of bacilli in the urine, is evidently the same in the horse as in man. The likelihood of a horse becoming an intestinal carrier when immunized in the manner described is lessened by the fact that the horse does not possess a gall-bladder. It is pointed out in conclusion that the risk of infection to the personnel in attendance on horses being immunized in this manner is greatly diminished by utilizing the discovery of Felix that some rough variants of *Bacillus typhosus* contain the Vi-antigen. The substitution of a rough avirulent but Vi-containing variant for the smooth virulent strain has been satisfactory because the production of Vi-immune body has been adequate and the immunizing material well tolerated by the horses.

The Typing of Pneumococci in Sputum.

JESSE A. M. BULLOWA, with the technical assistance of Mildred Sommers and Edward Turner (*The Journal of the American Medical Association*, November, 1935) reports the result of an investigation undertaken to determine how much reliance can be placed on the typing of pneumococci in sputum from cases of pneumonia. Both the Neufeld and Sabin methods of typing pneumococci were used. In the former method a droplet of sputum is mixed on a slide with a drop of homologous rabbit serum containing standard alkaline methylene blue dye. This is allowed to stand for a few minutes and is then examined under the oil immersion lens. With homologous serum the capsules of the pneumococci become swollen, while they remain unchanged with heterologous serum. Sera are pooled and tested in groups of four to save time in typing the thirty-two types of pneumococci now recognized. If a reaction occurs in any group, the separate types are studied to determine the one responsible. The reaction was obtained with sputa preserved in the ice box for several days and even with some inadvertently preserved with formaldehyde, phenol or tricresol. The slide agglutination method of Sabin consists of the injection of one cubic centimetre of sputum into the peritoneal cavity of a mouse; after three hours a few drops of peritoneal exudate are removed and small drops of exudate are mixed with the various typing sera on a slide. The slide is dried in the air and stained with dilute fuchsin and examined under the oil immersion lens for evidence of agglutination. The slide agglutination method of Sabin has the advantage over the Neufeld method in that a very few pneumococci in the sputum may multiply in the peritoneum of the mouse, while other organisms perish. Such a small amount of material is required for this method that in three or four hours there may be sufficient exudate to type the thirty-two types. One hundred successive recent Neufeld tests of sputum were found to give 76% positive results. By using microscopic method of typing in 1933-1934, only 1·2% of pneumococci encountered among adults were unclassified. The amount of infected pulmonary mucus needed for typing is very small, and frequently sufficient may be collected on a swab after coughing, especially if the patient is turned on to his unaffected side and urged to cough. This method of establishing the type of pneumococcus responsible for a given infection is simple but requires skill and experience in interpretation. In the presence of clinical evidence of consolidation organisms obtained from sputum are usually responsible for the infection. To determine the validity of the type obtained an attempt was made to correlate the type of organism recovered from the sputum and that obtained by transthoracic puncture of the consolidated area, and also with the organism recovered from the blood stream. In over 93% of cases the pneumococcus recovered from sputum was proved to be the same as the pneumococcus recovered in blood cultures, lung punctures, or from metastatic foci. The authors stress the importance of the value of blood cultures in the prognosis of cases of pneumonia, and also the necessity for using rabbit serum and not horse serum in the typing of suspected organisms.

Anthrax.

HERMAN GOLD (*Journal of Laboratory and Clinical Medicine*, November, 1935) has studied ten cases of anthrax occurring in a mill which handled goat hair imported from China and India. Seven of the patients were adults who worked in the mill, two were children who lived in the village surrounding the mill and played ball near the ground where waste hair from the carding machines was burnt, and one worked in a distant plant which obtained its hair bobbins from the local mill. The clinical diagnosis of anthrax was confirmed by the examination of smears and cultures from the lesions. Anthrax bacilli were recovered on culture from one of several samples of the goat hair collected at random. A broth filtrate of dust from the dust-box killed several guinea-pigs on injection. Smears and cultures of the heart's blood in these animals yielded *Bacillus anthracis*. Several attempts to recover the organism from the water supply of the building before and after use were unsuccessful. Human anti-anthrax serum was used in the treatment of all the patients. This was administered intravenously or intramuscularly in all cases except the first and only fatal case, in which it was also administered locally. The patient in this instance received 315 cubic centimetres intravenously and 30 cubic centimetres locally within forty-eight hours of admission to hospital. It was noticed that the local œdema spread very soon after the local injection of serum, and at autopsy the anthrax bacilli were found along the tissue spaces adjacent to the lesion. The average dose of serum given was 943·3 cubic centimetres, the smallest was 300 cubic centimetres, and the largest 1,350 cubic centimetres. The author was convinced that an optimum dose of serum was required for each case and that when this was reached good results fol-

lowed. The serum did not produce any severe reactions, and even when large doses were given intravenously no difficulties were encountered. "Neoarsphenamine" was given in addition to serum in the first five cases, but did not appear to alter or shorten the course of the disease.

Diphtheria Carriers, with Reference to Types of Corynebacterium Diphtheriæ.

MAY H. CHRISTISON, HELEN A. WRIGHT AND BARBARA J. SHEARER (*The Journal of Pathology and Bacteriology*, March, 1936) report the results of examination of 3,429 throat swabs taken from school children and other normal persons. Swabs were inoculated onto Löffler's serum slopes within two to five hours of being taken. Each throat was swabbed once only. After forty-eight hours' incubation films were stained by Neisser's method and cultures showing organisms having the morphology of *Corynebacterium diphtheriæ* were plated on McLeod's tellurite rabbit blood agar. The plates were examined after twenty-four and forty-eight hours, and when *Corynebacterium diphtheriæ* was present the colony type was recorded and the strain isolated and tested for virulence. Forty-five strains (1·3%) of *Corynebacterium diphtheriæ* were isolated, of which 17 (37%) were virulent and 28 (64·2%) avirulent. The thirty-five strains which were more fully examined yielded eight Type I (*mitis*), one Type II (intermediate), one Type IV (*gravis* colony, non-starch-fermenting, virulent), twenty-one Type VI (*gravis* colony, non-starch-fermenting, avirulent) and four unclassified. It was noted that at a time when 50% of the routine swabs yielded Type II strains only 3% of this strain were recovered in the swabs examined as part of the investigation. The importance of the virulence test in view of the high incidence of avirulent strains recovered is stressed by the authors.

HYGIENE.

Progress Report on Pertussis Immunization.

PEARL KENDRICK AND GRACE ELDERING (*American Journal of Public Health*, January, 1936) furnish a progress report on the work of pertussis immunization at Grand Rapids for the past three years. A once-washed ten million per cubic centimetre suspension of organisms killed by merthiolate, 1 in 10,000, at cold-room temperature for a week was used. Sauer's dosage was followed, about seven cubic centimetres being given in five injections into various arm muscles. Children eight months to five years (especially in the second year of life) were studied. Public health nurses follow up each child. Exposures are classified as definite, indefinite or unknown; "definite" is applied to indoor contact during the first three weeks after symptoms have appeared. Duration over six weeks with violent paroxysms and bronchopneumonia are classified as severe. A typical case is one with characteristic whoop and uncomplicated illness of four to six weeks; "slight" denotes an illness of less than four weeks with only occasional symptoms. A cough of less than a week is not included. The children under close observation numbered 1,592. Four children of 712 vaccinated against pertussis contracted the disease in 60 definite exposures; while of 880 controls, 63 became affected in 84 definite exposures. Two (vaccination) and eleven patients (controls) developed pertussis, though no definite contact was known. The immunity time-table could not be estimated. It is suggested that a high level is reached after the third or fourth injection.

Diphtheria Prevention.

J. G. FITZGERALD (*Canadian Public Health Journal*, February, 1936) states that with the rise in its epidemic incidence in 1927 diphtheria became the chief cause of death in the city of Toronto in the age groups two to fourteen years, and an immunization campaign was undertaken by the Department of Public Health. Of the supplies available for the Schick test, only six out of fourteen batches corresponded with the standards adopted by the League of Nations. As a routine to determine susceptibility the Schick test need not be carried out in children between the ages of six months and six years. Schick testing is desirable at varying intervals after immunization to check its persistence, because permanent protection is not conferred on all who are immunized, and the duration varies. Antitoxin titration should be done in cases of doubtful interpretation also in older persons and in those positive to the Moloney test. Of these latter, 20% may be susceptible. As alum-precipitated toxoid will give twenty to thirty times the antitoxic response in experimental animals that diphtheria toxoid will give, the problem arose, which was the better antigen for human use. Fraser selected two groups of children in residential institutions. The first group of "Schick positives" and "Moloney negatives" were given one dose of one cubic centimetre of alum-precipitated toxoid. Only those, 40 in number, with less than one five-hundredth of a unit of diphtheria antitoxin by titration of the blood were chosen. The blood was retested after ten weeks and again twelve to fourteen weeks later. After ten weeks 30% of persons with the single dose of alum toxoid had more than one-fiftieth of a unit of antitoxin; three doses of diphtheria toxoid gave a percentage of 91. After one year the three-dose group still gave 69%, with 91% over one one-hundredth of a unit, as against the alum-precipitated toxoid 11% with one-fiftieth or more, 19% with one one-hundredth or more. The superior results are in harmony with the recognized value of divided doses of antigen given at suitable intervals. It is clear that the single dose method of any prophylactic cannot be as efficient. Ramon and others recommend two doses of unmodified toxoid or anatoxin of high flocculating value. Toxoid with 20 flocculating units per cubic centimetre will in two doses bring about in 90% effective protection. Tests by Brandon of children previously rendered "Schick immune" one, three and five years previously showed that susceptibility returned in 3% after one year, in 8% after three years, and in 34% after five years. In regard to innocuity, immunizing power and permanency, diphtheria toxin contains foreign protein and is less active as an antigen. Alum-precipitated toxoid in single doses is not so effective as three doses of diphtheria toxoid. In the five-year period only 40 of the immunized contracted diphtheria and only one died. In Toronto 93,000 school children have received three doses of toxoid, another 17,000 one dose, while 11,000 pre-school children were immunized by private practitioners. Toronto, with a population of 630,000, had in 1926 over 1,000 cases of diphtheria and 90 deaths; in 1927, 114 deaths. In 1934 only 18 cases were enumerated, while in the past fifteen months one single death was reported. Not one carrier of virulent diphtheria was found among over 5,000 children.

Vaccination against Tuberculosis.

J. A. BAUDOUIN (*Canadian Public Health Journal*, January, 1936) reports that in 1925 the University of Montreal agreed to test Calmette's *Bacille Calmette-Guérin* ("B.C.G.") vaccine. Up to December, 1934, 5,126 children were vaccinated. In 1934, 1,519 were vaccinated, 23% by private practitioners. Of the 5,126 babies, 249 were contacts of open tuberculosis, 333 of suspected tuberculosis, a total of 582. A group of 971 similar contacts unvaccinated acted as a control. Omitting the first month mortality, the specific mortality rates for other causes of death for the seven years are 82·5‰ and 116‰ respectively among the vaccinated and unvaccinated groups. For tuberculosis the rate was 21‰ among vaccinated and 107‰ among the unvaccinated groups. When contact occurred with tuberculous patients with tubercle bacilli in the sputum, the vaccinated showed 24 deaths as against 111 deaths per thousand exposed persons. Viewed from the side of morbidity, 1·5% of the vaccinated and 5·6% of the non-vaccinated became tuberculous. Baudouin claims that "B.C.G." vaccination against tuberculosis must be included as part of a complete campaign for the control of disease.

Special Article.

(Contributed by Request.)

THE HISTIDINE TREATMENT OF PEPTIC ULCER.

THE last twenty years will always be notable for the discovery of a number of important, simple and more or less specific remedies for chronic and relapsing medical ailments. Some of these, such as the isolation of insulin, were anticipated, and it was plain that sooner or later a preparation such as insulin would be available for use in an active and pure form. In the same way it is now evident that before long extracts of the sex glands will be concentrated to the strength required for human therapy. Other developments were chance discoveries wherein the application of suggestive results from animal experimentation were immediately applied to man with astounding success, as in the case of liver therapy. The gaps in knowledge between the two series of results have been filled in subsequently and have usually provided a remarkable and entirely new ætiological conception. The histidine treatment of peptic ulcer belongs to the latter category. A laboratory observation, made under conditions of extreme physiological distortion, has been at once applied to the human disease with at least an encouraging outcome. The gap is wide and as yet mainly unexplored, but to this generation, which has seen revealed the extraordinary pathogenesis of the deficiency anæmias, the future is promising.

Peptic ulcer is increasing in frequency. It still presents a problem to physician, surgeon and laboratory worker alike, in spite of the undoubted successes which have attended the Sippy *régime*. It is often a relapsing disease, related to constitutional and familial factors, with some of which we are acquainted, such as an active sthenic disposition and a small, highly motile stomach secreting a juice of high acid concentration. Many patients suffering from gastric ulcer, however, have no such features. Focal sepsis is undiscoverable, and then continued relapse becomes the despair of the medical attendant, besides producing in the individual psychological changes which themselves may assist in the vicious cycle.

It is obvious, therefore, that any form of treatment which is stated to hasten recovery and so to anticipate the development of a fatal complication, must command universal attention and trial. Even although relapse may occur as frequently as before, the possession of such an instrument must remove many former dangers. Everyone is consequently interested in histidine, yet, although three years have elapsed since its use in this connexion was announced, strikingly few reports have appeared in British journals. Arthur Hurst and other British authorities on gastro-enterology have been curiously silent, probably watching their patients for a period of two years or more before giving their opinion.

The object of this communication is merely to summarize and criticize the work, experimental and clinical, concerning the use of histidine which has appeared up to the present time.

In 1919 Mann and Williamson (the former is a well known American experimentalist), while employed in observing the results in dogs of artificially short-circuiting various components of the alimentary canal, discovered that anastomosis of the upper part of the duodenum to the lower part of the ileum produced, after a maximum lapse of thirty-five days, ulceration of the stomach, histologically resembling that of human peptic ulcer. The physiological disturbance so produced is to divert the natural duodenal secretions, containing bile, enterokinase and chyme from the stomach, into the terminal part of the ileum. As a result, digestion of all these types of foodstuffs, especially protein, is most incomplete and wasting quickly ensues. The reaction of the lower intestinal contents is rendered more acid, putrefactive organisms are destroyed, and diarrhœa, to which the presence of so much bile salts contributes, means that no time is given for adequate protein-splitting to occur. The experiment was continued by Weiss and Aron, of Strasbourg, who in 1933 described similar results and who noted that stomach ulcers occurred in 100% of dogs operated upon, the time taken for erosion to occur varying directly with the situation of the anastomosis. The nearer the junction was made to the caecum, the earlier was the ulceration, as judged by the appearance of blood in the stool, and the shorter the life of the laboratory animal. Again, the exclusion of either bile or duodenal contents from the small intestines gave a fewer number of positive results, which also took a longer time to appear. As would be expected from reports of gastro-colic fistula in man, cachexia is accompanied by a profound anæmia, due to non-absorption of hæmatinic factors. These workers found that the dogs excreted very small amounts of indol or urobilin in the urine, a finding which Fontès states also occurs in peptic ulceration in man.

The cause of the ulceration was thought by some to be the loss of normal alkaline reflux from the duodenum. Leriche considered that disturbed mucous secretion was perhaps responsible. Weiss and Aron, however, considered the most likely explanation was the loss, or rather unavailability, of certain amino-acids, normally essential for health, which were no longer produced under the conditions of the experiment. Two such acids, histidine and tryptophane, are known to be necessary for growth and must be part of any adequate dietary, since the organism apparently cannot synthesize them for itself. The two workers thereupon decided to see whether the administration of these acids to dogs upon which the Mann-Williamson operation had been performed would protect them from gastric erosion. Five dogs were operated upon, two of which were kept as controls, the remaining three receiving daily injections of solutions of tryptophane and histidine. The former, from the fifth or sixth day after the operation, began to show blood in the fæces, while no trace of blood ever appeared in the stools of the animals receiving treatment. All animals gradually became anæmic, wasted and died, but while the two controls showed well marked ulcerative changes, the three dogs receiving the amino-acids had a completely normal-looking gastric mucosa. They also outlived the others by some weeks.

It was natural that so simple and safe a therapy should at once be given a trial in the treatment of patients suffering from peptic ulcer. Five individuals showing clinical and radiological evidence of ulcer, two of the patients having recurrent lesions after gastro-enterostomy, were given twenty daily injections of the amino-acid mixture. Pain and blood in the stools disappeared after the fourth to the sixth injection, and after twenty days, Weiss and Aron state, all signs of ulcer, clinical and radiological, had disappeared. Hypersecretion and hyperacidity of the gastric juice were further alleged to return to normal.

It was subsequently determined that histidine alone produced the same protection as histidine *plus* tryptophane, though tryptophane was thought to hasten the rate of healing. Histidine is an amino-acid containing an amidazol nucleus impossible of synthesis in the body. Dietetic experiments have shown it to be essential for animal growth and the maintenance of body weight. From it are derived carnosine and histamine. Histamine and like substances have become of increasing physiological importance in latter times and have most powerful effects upon many physiological processes, including gastric secretion. Clinical trials in the treatment of peptic ulceration have chiefly been made with a 4% solution of histidine monochlorhydrate ("Larostidine"), while latterly histidine hydrochloride has become available for clinical application.

Experimental and clinical trials followed in the use of histidine, given orally. Fontès and Bauer had previously used the substance in the treatment of anæmias, cardiac asthma, *angina pectoris*, Raynaud's disease *et cetera*, besides gastro-duodenal ulceration. They state that larger quantities of the crystalline salt are required by mouth,

but that sufficient is usually absorbed to give protection against ulceration in the experimental animal or to cure peptic ulceration in man. Bacterial flora are stated to have little destructive effect upon the lateral alanine chain of tryptophane or histidine, and it is held that in the passage of histidine through the liver by no means all is retained. As would be anticipated, the short time available for absorption in the case of the dog subjected to the Mann-Williamson procedure results in considerably less protection than is given by parenterally administered histidine. The ulcers in dogs treated orally were smaller, however, and the animals survived longer. On these grounds, tablets of histidine have been employed by some clinical workers for use after a course of injections has been completed.

The remainder of the literature is concerned with the clinical application of the substance. Bulmer has reported immediate results in 54 patients; Bogendörfer in 30, Smith in 12, Weiss and Aron in about 17, and a number of isolated case reports are available (Craig, Ryan). All these physicians have employed at least twenty consecutive daily injections of five cubic centimetres of a 4% solution of histidine (0·2 gramme). The cases have been entirely unselected, and include examples, typical both clinically and radiologically, of patients with peptic ulceration; the patients varied in age and sex, while the ulcers varied in duration, size, situation and severity. No instance of post-surgical anastomotic ulcers is specifically mentioned. The patients have uniformly been given no instructions about diet, and have remained ambulatory and, in most instances, at work. No alkali has been suggested or provided, and no mention is made of attention to such factors as smoking, anxiety, mastication or focal sepsis.

In general, it can be said at once that the provisional results have been startlingly good. The largest and best recorded series to date has been completed by E. Bulmer, of Birmingham. All of his 54 patients, clinically and radiologically proven to be suffering from ulcer, received 21 daily injections of the standard dose. This was increased in some instances to 20 cubic centimetres daily for three weeks, without untoward reactions appearing, either local or general. He has divided the patients into three groups: (*a*) immediate successes, of which there were 58%; (*b*) symptomatic successes, in which radiographic evidence of ulcer persisted, 19%; (*c*) failures, the patients being cured neither of their symptoms nor of their radiographic abnormalities, 23%. The proportion of duodenal to gastric ulcers increased from group (*a*) to group (*c*). It was apparent too, as Aron has stated, that a shorter history favoured relief from histidine. Bulmer was able to follow up 36 of his 54 patients, but he does not state for how long. By what was probably six months later, 3 of the 18 ulcers treated with immediate success had recurred, in none of the partial failures had relapse taken place, while the failures persisted unchanged. David Smith gives the full history of 12 patients, all of whom had had symptoms from seven months to thirteen years previously, averaging seven years. All suffered from radiographically obvious gastric ulceration, none from duodenal erosion. Occult blood was present in the stools of each patient. Three had a normal gastric acidity; the remainder hyperchlorhydria. All were free from pain by seven days after commencing histidine injection. The average gain in weight within a month was approximately half a stone. Ten showed radiological cure within thirty-four days, another required thirty-nine days and another fifty-four days. A "very large ulcer of the lesser curve" disappeared in twenty-nine days. A recurrence six months later in another patient cleared up after four injections.

There is sufficient in these case histories to call for universal attention to this form of treatment. The capricious and obscure nature of the disease, however, its tendency to spontaneous remission, and the fact that good results (up to 78%) have been reported following the injection of milk protein (Martin) call for much caution in the interpretation of results. Relief is also stated to follow injections of sterile peptin or of sodium benzoate. It is a far cry from the drastic and mutilating operation on the dog to peptic ulceration in man. In the case of the dog, food is subjected to gastric and intestinal digestion only, and little or no time is given for this to occur. In man, duodenal stimulation occurs normally, though food may be hurried through. Aron's histidine deficiency hypothesis is a satisfactory explanation of the dog's condition, but it is unlikely that gastric ulcer in man will prove to be a true deficiency disease, as most patients destined to suffer from ulceration take a normal diet. According to Fontès, however, administration and presumable storage of histidine before dogs are operated upon fail to prevent or delay ulceration. Studies are required in histidine intake and excretion in persons subject to ulcer. It is tempting to reflect upon the possible rôle of histamine in the genesis of gastric ulcer, and of the occurrence of duodenal ulceration when this substance is released from burnt tissues. The pituitary gland may be indirectly concerned, since gastric ulceration occurs in some pituitary tumours or follows injections of pituitrin into rabbits. Histidine may be chemically related to substances preventing autodigesion of the gastric mucosa. All such speculation presupposes specific therapeutic benefit from histidine, which, though strongly suggested, is as yet not finally proven. Most authors are carefully watching their patients for at least a two-year period—the prevention of relapses has to be sought. This, however, is often not achieved by alkali therapy, and the place of histidine should not be judged entirely on its prophylactic ability. We have been provided with a cheap, innocuous substance, which allows the patient to continue his work and diet, and which merely demands a daily attendance for three weeks for a reactionless intramuscular injection. Such an economic advantage alone is of vast importance to the patient. Further, Bulmer has estimated that almost one-third of the medical beds for adults in a general hospital will be vacant if ambulatory treatment is found to be satisfactory. The present evidence is most encouraging, but it would be unwise to jettison attention to those factors which experience has repeatedly shown us to have deleterious effects on prolonging the duration or facilitating the recurrence of peptic ulcer. It is perhaps unwise at present to relax dietetic and alkaline measures, especially when treating duodenal ulcers and large or callous gastric ulcers, and it might be well to reserve unaided histidine therapy for the gastric ulcer of recent onset. The total number of case reports is even yet relatively small, and every clinician will look forward with the greatest eagerness to an authoritative statement, based upon more suitable statistics, as to whether the parenteral administration of histidine, as liver extract does in primary anæmia, can permanently check peptic ulceration. Whatever be the mode of action, even if it only hastens the cure of each ulcer as it forms, histidine can be assured of a grateful reception.

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British Medical Association News.

SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held at the Royal Alexandra Hospital for Children, Sydney, on April 23, 1936. The meeting took the form of a series of demonstrations by members of the honorary staff.

Osteomyelitis.

DR. P. L. HIPSLEY showed a boy, aged five years, who had noticed a swelling below the right knee at Christmas time, 1935. The boy had fallen from a bicycle and local tenderness had appeared. At the time of admission the swelling was increasing in size and was almost painless. X ray examination revealed probable chronic osteomyelitis at the upper end of the right fibula—possibly Ewing's tumour. Deep X ray therapy was commenced at the Royal Prince Alfred Hospital on April 21, 1936.

Dr. Hipsley's next patient was a boy, aged nine years, who had had osteomyelitis of the right ankle five years previously and osteomyelitis of the left hip one year previously. Operation had been performed on the right hip, and the wound had continued to drain since. There was an adduction and flexion deformity. The patient was admitted to the Royal Alexandra Hospital for Children in March, 1936. The head of the left femur was found to be separated, so was removed on March 10, 1936. The child was being nursed on a Jones frame.

Dr. Hipsley also showed a boy, aged twelve years, who complained of pain in the left hip, commencing in July, 1935. Culture of fluid from the left hip resulted in a growth of *Staphylococcus aureus*. Similar organisms were cultured from the urine. The hip was curetted in August, 1935. The patient was given three transfusions of blood in September, when septicæmia was diagnosed.

Gradual devitalization of the head of the femur had continued till the time of the meeting.

Dr. Hipsley's next patient was a boy, aged eight years, who had suffered from abdominal pain and vomiting on January 27, 1936. Pain in the left thigh appeared on January 29, 1936, and increased in severity. The patient became very ill, and blood culture showed *Staphylococcus aureus*. Three transfusions of blood were given in February, 1936. The child developed bilateral pneumonia and an enormous pericardial effusion, which was gradually absorbed.

X ray examination showed osteomyelitis of the left ilium.

Dr. Hipsley's last patient was a boy, aged nine years, who had suffered from pain in the left leg in August, 1935. This was followed by a fall from a bicycle, and, one week later, vomiting and pain above the left knee. He was admitted to the Royal Alexandra Hospital for Children in November, 1935. He was given eight daily applications of deep X ray therapy. A pathological fracture of the left femur occurred.

Exploratory operation was done in January, 1936. Erysipelas of the left leg developed in February, 1936. The wounds were continuously discharging. Erysipelas of the left leg occurred again in April, 1936.

Scheuermann's Disease.

DR. F. C. ROGERS showed a male child, aged twelve years, who had been admitted to hospital on September 26, 1935, with a history of a constant stoop for eighteen months and a swelling on the upper part of the back for twelve months. There was no pain, and there was no loss of weight or other symptoms. There was no reaction to the von Pirquet test. X ray examination on September 16, 1935 (prior to admission) revealed Scheuermann's disease of the spine (*osteochondritis deformans juvenilis*) affecting especially the mid-thoracic vertebræ. On December 18, 1935, X ray examination revealed well marked osteochondrodystrophy; no change had occurred since the former examination.

Dr. Rogers said that this disease affected the upper and lower epiphyses of the seventh to tenth thoracic vertebræ; it was a disease of adolescence and caused a fixed kyphosis.

DR. T. Y. NELSON showed a female child, aged ten years, who had been noticed to have round shoulders for at least two years. She was treated in the orthopædic department of the hospital for postural deformity without improvement, although her muscular development was exceptionally good. X ray examination showed no abnormality. In August, 1935, it was noted that the back was becoming rigid in the region of the kyphos. X ray examination still showed no organic lesion. The patient was fitted with a plaster jacket to prevent further deformity; but this proved unsatisfactory, and she was then admitted to hospital and treated in the supine position with a sand-bag under the affected portion of the spine. In January, 1936, there appeared to be improvement in the deformity; but X ray examination showed that the degree of kyphosis was unchanged and the anterior part of the bodies of the eighth to the tenth thoracic vertebræ had a ragged appearance suggestive of early osteochondritis. The patient was kept alternately in the supine position and in the "elbow" position, with the shoulders raised. In March, 1936, X ray examination showed some wedging of the vertebral bodies and flattening of the intervertebral disks anteriorly. The lesion had not increased.

Dr. Nelson asked those present to note the early onset of this type of osteochondritis, which did not usually occur before the age of twelve to sixteen years, when epiphyseal plates above and below the vertebral body were first seen. There was an absence of any history of trauma.

Muscular Dystrophy.

Dr. Nelson's next patient was a male child, aged three years, who was brought to the orthopædic department of the hospital because of a peculiar waddling gait. He was noted to be clumsy in walking from the age of two, when he made his first attempts. Dr. Nelson said that the condition was one of muscular dystrophy of the facio-scapulo-humeral type described by Landouzy and Déjerine. A characteristic feature was the weakness of the facial muscles, causing ptosis on both sides and an expressionless face. He smiled with his eyes but not his face. The patient had the lordosis and weakness of the spinal muscles seen in the pseudo-hypertrophic type; but the prognosis was better in this type, as the condition progressed much more slowly.

Dr. Nelson also showed a male child, aged nine years, who was suffering from pseudo-hypertrophic muscular dystrophy in an advanced stage. The patient had one sister, who was not affected with the disorder. There was great hypertrophy of the calf muscles and *infraspinati*; but the *glutei* were not so prominent as was usually seen. There was wasting of the thighs and the *pectoralis major* muscles. There was the usual lordosis on standing, which passed into kyphosis on sitting, due to weakness of the spinal muscles. He also demonstrated the characteristic method of rising from a lying position by climbing up himself. Cavus and equinus contractures of the foot made him walk on tip-toe. The mentality was subnormal and the weakness was so extreme that the patient was unable to walk any distance without tiring.

Hæmorrhagic Nephritis.

DR. E. H. M. STEPHEN showed a male patient, aged four years, who had been admitted to hospital on May 1, 1935, with a history of swelling of the face on and off for one week and the passing of very little urine. The urine was dark in colour. At the time of admission the face was pale and puffy; the tonsils were enlarged and inflamed; scattered râles could be heard on the right side; the liver was slightly enlarged. The urine was very turbid and dark, and loaded with albumin (semi-solid); blood cells

were numerous and there was an enormous number of granular, blood and epithelial casts. The blood urea content was 77 milligrammes per 100 cubic centimetres.

On May 3, 1935, it was reported that the child had passed only one ounce of urine since admission. He was given 300 cubic centimetres (ten ounces) of 20% glucose in saline solution intravenously. This injection did not assist secretion of urine. The blood sugar content reached and continued for hours at 400 milligrammes per 100 cubic centimetres of blood. Some twitching was observed at times. A diet of fruit juices and 10% glucose solution only was given.

On May 4, 1935, the urine was scanty. Hourly kidney packs were applied for twenty-four hours; then they were applied every four hours. The patient was given 90 cubic centimetres (three ounces) of a 50% magnesium sulphate solution *per rectum* daily for four days.

On May 6, 1935, hot packs were applied twice; good skin reactions followed. This was repeated for the next four days.

On May 8, 1935, six ounces of urine were passed. The swelling of the face was subsiding. He was taking fruit juices and one pint of skimmed milk a day.

On May 10, 1935, he was given a diet of milk and milk foods and grated apple.

On May 17 the systolic blood pressure was 146 and the diastolic pressure 120 millimetres of mercury. The blood urea content was 96 milligrammes per 100 cubic centimetres, and the blood cholesterol content was 260 milligrammes per 100 cubic centimetres. The leucocytes numbered 21,000 per cubic millimetre of blood. By May 25 the œdema was subsiding and the patient was passing more than 360 cubic centimetres (twelve ounces) of urine a day.

On June 2, 1935, the hæmaturia was decreasing and the œdema was much less. On June 17 the systolic blood pressure was 110 and the diastolic pressure 76 millimetres of mercury. On June 24 there was still a trace of albumin in the urine and a few red blood cells were seen. On July 16 the blood urea content was 80 milligrammes per 100 cubic centimetres. On July 17 tonsillectomy was performed. Slight secondary hæmorrhage occurred on July 23. Later the child became infected with measles, and this was followed by double *otitis media*. Acute appendicitis, necessitating operation, occurred in December, 1935.

Pink Disease.

Dr. Stephen also showed a female infant, aged five months, who had been admitted to hospital on April 14, 1935. Her illness had commenced six weeks previously with mild bronchopneumonia. For two weeks she had been fretful and drowsy, with cold, clammy hands and feet and perspiring head. Her weight was 6·6 kilograms (fourteen pounds ten ounces), and she had been losing weight. She had vomited after feedings for two days prior to admission. The mother stated that she had had sore eyes since birth.

Examination revealed her as an irritable infant with perspiring head, hypotonic muscles and photophobia. There was no rash, but finger nails and toe nails were pink.

Urine examination revealed *Bacillus coli communis* and enterococci on culture.

Feedings consisted of modified cow's milk and a daily "liver cocktail".

Mongolism.

Dr. Stephen also showed a girl, aged six years, whom he had first seen as an out-patient, at the age of two years, on account of her inability to walk. Hypotonus of her musculature was so pronounced at that time that her parents had been informed that she had congenital dislocation of both hip joints.

At the time of the meeting she was below normal in stature. She had a mongoloid facies with slanting palpebral fissures and triangular nostrils, and a typical round head with pale, lustreless hair. The little finger was over-short and incurved. There was no evidence of any congenital cardiac defect. In disposition she was typically over-facile, very jovial, playful and affectionate. Dr. Stephen said that in addition to mongolism it seemed possible that there was some deficiency in thyreoid secretion, as administration of thyreoid extract seemed to accelerate her progress.

Acholuric Jaundice.

Dr. Stephen's next patient was a girl, aged three years and ten months, who had been in the hospital at the age of twenty-two months with a history of jaundice at the age of three months. She had been pale ever since. She sat up at the age of six months and walked at eleven months, and, apart from persistent pallor, appeared to be healthy. She was first admitted to hospital with pyrexia, vomiting, constipation and drowsiness. She had one brother, who was quite healthy. Two of her father's sister's family gave an indefinite history of jaundice in early childhood; they were now healthy adults.

Examination revealed a fretful, difficult, very pale child; there was frontal bossing; there was no icteric tinge of the conjunctivæ; there was no lymphatic enlargement; there were a few slight bruises, and there was splenic enlargement. There was no reaction to the von Pirquet test (with human or bovine tuberculin). The red corpuscles numbered 1,800,000 per cubic millimetre; the hæmoglobin value was 29% and the colour index 0·8; polychromasia, poikilocytosis and anisocytosis were pronounced; microcytes predominated. The leucocytes numbered 5,800 per cubic millimetre, 55% being neutrophile cells, 30% lymphocytes, 14% monocytes and 1% eosinophile cells. Blood platelets were abundant. There was no reaction to the Van den Bergh test. The result of the red cell fragility test was normal. There was no reaction to the Wassermann test.

Dr. Sear reported that X ray examination revealed slight rhachitic changes, no evidence of abnormal bony trabeculation in the femora, but some loose trabeculation in the upper ends of both radii suggestive of early Gaucher's disease; no abnormality was detected in the skull.

Ten days later the red blood cells had increased to 3,680,000 per cubic millimetre and the hæmoglobin value to 40%; the leucocytes now numbered 12,600 per cubic millimetre. The spleen was barely palpable. A year later she was readmitted to hospital. The spleen was then considerably enlarged and the liver border was palpable. Dr. Sear reported that the trabeculation of the radii was looser than in 1934 and more suggestive of Gaucher's disease. There was no increase in the fragility of the red corpuscles. There were numerous reticulocytes in the blood, and the eosinophile cells were in the proportion of 7%.

On February 14, 1936, there was found to be an increase in the fragility of the red cells.

The child contracted diphtheria.

On April 20, 1936, the red cells numbered 3,210,000 per cubic millimetre and the hæmoglobin value was 45%; a number of reticulocytes were present.

At the time of the meeting pallor and splenomegaly were evident.

Chronic Ulcerative Colitis.

Dr. Stephen also showed a female child, aged ten years, who had been admitted to hospital on October 22, 1935. Her illness had commenced ten months previously, with enteritis, two months after which she commenced to pass mucus, occasionally blood-stained. She had been in another hospital for four months prior to her admission to the Royal Alexandra Hospital for Children, suffering from diarrhœa and the passing of mucus and blood in the stools. At the time of admission her temperature was 38·3° C. (101° F.) and her pulse rate was 120 per minute. She was emaciated and was passing on an average seven motions a day. At the time of the meeting there was still some irregular pyrexia and there were three or four stools a day, containing mucus and occasionally blood.

X ray examination on October 25, 1935, revealed smoothness of the colon, suggesting colitis.

On December 19, 1935, appendicectomy was performed by Dr. Hipsley; the large intestine was found to be thickened and ulcers were palpable. The child collapsed on the evening following the operation, but revived after an injection of 5% glucose in saline solution.

On January 12, 1936, transfusion with citrated blood was commenced, but the operation had to be interrupted on account of the child's condition. On January 20 there was pronounced œdema of the lower extremities.

No entamœbæ or non-glucose-fermenting organisms were found in the fæces; numerous colonies of *Staphylococcus aureus* were obtained on culture. A blood count, made on January 7, 1936, revealed 3,310,000 red cells and 8,300 white cells per cubic millimetre. There were 76% of polymorphonuclear leucocytes, 20% of lymphocytes, 3% of monocytes and 1% of eosinophile cells.

Various methods of treatment were employed, including irrigation with "Albargin", "Yatren 105" and "Calsol" (12 drops to the pint of normal saline solution); bismuth medication and injections of emetine hydrochloride and an autogenous vaccine of *Staphylococcus aureus*.

Rickets.

Dr. Stephen's last patient was a male infant, aged eleven months. He had weighed 2·7 kilograms (six pounds) at birth and had been fed successively on "Lactogen", cow's milk and Benger's food. He had a history of persistent cough and enlargement of the abdomen. He was very constipated and his motions were large. He was apt to gain, then lose weight. His weight on admission was 5·0 kilograms (eleven and a quarter pounds). He had been recommended for admission as possibly suffering from cœliac disease; but analysis of the fæces showed a total fat content of 20% of dried fæces; unsplit fat 12% of total fat; split fat, 88% of total fat. The patient was less than half the normal weight for his age; he was pale, and sucking pads were well seen. There was frontal bossing and the head was of the "square" type. The right anterior fontanelle measured 3·75 by 3·75 centimetres (one and a half by one and a half inches). The limbs were wasted, and there was marked hypotonus of the muscles. The abdomen was distended, possibly due to Hirschsprung's disease.

There was no reaction to the Wassermann test. The blood calcium content was 10 milligrammes per 100 cubic centimetres. X ray examination revealed all the bones to be more translucent than normal, suggesting a nutritional condition.

Treatment consisted in irrigation of the colon twice a day and the administration of "Radiostoleum" in a dose of 15 drops a day.

(To be continued.)

NOMINATIONS AND ELECTIONS.

THE undermentioned have been elected members of the New South Wales Branch of the British Medical Association:

Catalano, Rupert, M.B., B.S., 1933 (Univ. Sydney), Tennant Creek, Northern Territory.

Prior, Allen Percival, M.B., B.S., 1935 (Univ. Sydney), Royal North Shore Hospital of Sydney, St. Leonards.

The undermentioned has been reelected a member of the New South Wales Branch of the British Medical Association:

Spence, Lockhart James, M.B., Ch.B., 1914 (Edinburgh), Bank Chambers, Bolton Street, Newcastle.

Correspondence.

THE TRICEPS REFLEX.

SIR: Text-books on nervous diseases all give a list of the deep tendon reflexes. In this list is found a reflex called the triceps reflex. The question that has exercised my mind for some years is whether the phenomenon resulting from striking the tendon of the triceps muscle should be regarded as a true deep tendon reflex. I have come to the conclusion that to so regard it is erroneous—this for the following reasons:

1. I have during the last few years had under my care four patients suffering from multiple peripheral neuritis. In each one of these every deep tendon reflex was abolished except the triceps.

2. I have recently examined a patient with amyotrophic lateral sclerosis in whom the biceps and supinator reflexes were completely abolished in each arm, but the triceps reflex was still present. (Note there was wasting of all arm muscles, the triceps being wasted no more than the other muscles.)

3. In many patients suffering from neurotic disorders there is a marked increase in the activity of the tendon reflexes, but it is very seldom that the response of the triceps tendon to stimulation is anything as active as other muscles.

4. The response of the triceps muscle to stimulation of the tendon is not of the same nature as that of the other muscles. It is more of the nature of the slow deliberate response that any muscle exhibits to direct stimulation.

5. The tendon of the triceps is a broad, flat, tendo-muscular organ, not like the tendon of the quadriceps *et cetera*.

I should appreciate the views and criticisms of any of your readers on the question raised.

Yours, etc.,

110, Collins Street, Melbourne, May 7, 1936.

PAUL G. DANE.

PSYCHOANALYSIS.

SIR: Only eight or ten years behind other countries, psychological medicine has reared its protean head in the columns of this journal and has evoked the customary acclamatory and objurgatory reaction from its various disciples.

Psychology in general, but particularly psychoanalysis, lends itself agreeably to such an exposition of the critical and prejudicatory faculties. The reasons are disclosed admirably in some of the correspondence.

Dr. Coupland Winn, whose work, incidentally, I know and appreciate, set forth clearly and concisely, in two articles, the elemental or, should one say, fundamental principles of the Freudian doctrine.

To some of these Dr. McGeorge and Professor Osborne took violent exception, displaying therein vastly more ardour than logic and exhibiting here and there a naïve disregard of reality.

Their opinions are not new. Anyone who troubles to search the files of *The British Medical Journal* and *The Lancet* for 1916-1917 will find these *ex parte* objections expressed even more forcibly and prejudicially.

Dr. McGeorge dislikes the conception of infantile sexuality and emphasizes his attitude by saying that it is utterly "wrong"! Yet infantile sexuality is just as thoroughly proved—and just as little understood—as the quantum theory.

His argument against psychoanalysis, that it is discreditable because it is exploited by quacks and charlatans, is an amazing piece of *non sequitur* fallacy, unworthy of his pen.

From the viewpoint of the International Psychoanalytic Association, any person who practises psychoanalysis (the term is reserved for the Freudian technique only) without the two or three years' personal analysis and the four years' training course is, strictly speaking, a "quack". And child analysis requires a year of further study. This complete curriculum is exceedingly difficult and complex, and it is probable that there is no one in Australia who has undertaken it. There are approximately 300 fully trained analysts in the world, most of whom are medical men. Incidentally, the above-mentioned sophistry might well be applied to the medical profession, which has to contend with more unqualified meddlers than any other corporate body.

Professor Osborne is annoyed at the undue emphasis laid upon sex in a Nordic community like Australia, and evidently would have us believe that sex energies are more developed in Oriental than in Occidental peoples. With more justification than he probably realizes, he would assign some sexual significance to recent German domestic politics.

Certainly it must be humiliating to him to have to realize that Nordics after all may have just as strong latent sex energies as, say, Chinese, with whom most of the technical subtleties of the art of love originated, long before we knew anything of the finer shades of ethnological differentiation. For that matter, it is highly likely that at some remote age our admirable Nordic ancestors may have preferred the cultural niceties of Europe to a more questionable Asiatic homeland.

Freud, of course, is a Moravian Jew, and as such is ethnologically synonymous with a race which, despite the somewhat precocious and reactionary mental acuity evidenced by some of its members, cannot lay any special claim to emotional stability. None the less, not even the Jews can take the credit for inventing sex impulses.

Professor Osborne is inclined to refute the idea that the majority of illnesses are psychological in origin. It is most gratifying to have this assurance. Being one of those unfortunates who have had to handle neurotics for the past dozen years, and having listened to great psychological argument since an early age, I have always had a lingering hope that a hidden, but simple, physical basis might be found to account for the multiform signs and symptoms displayed by the increasing horde of ill-adjusted products of our vaunted civilization. Confessing to failure in the search, I turned to the more materialistic problem of rheumatology. But even here it soon became evident that psychogenesis played no inconsiderable part, on occasion, in the production of such ailments as neuritis and hypertrophic osteoarthritis. To coin an apophthegm: the neuritic is often the neurotic. And, at the risk of becoming encyclopædic, I have no hesitation in suggesting that it will be realized one day that a psychogenic factor is a determinant in some of the phases or types of such symptoms and diseases as thyreotoxicosis, hyperpiesis, peptic ulcers, nervous dyspepsias, endocrinopathies, asthma, migraine, angina, ametropias, psoriasis, pruritus, stammering, Parkinsonism, disseminated sclerosis, epilepsies, cardiac arrhythmias, menstrual disturbances, postural deformities, diabetes, cramps, spastic constipation, visceroptoses, Raynaud's disease, choreas, muscular dystrophies, sexual disturbances, insomnia, and most accidents—to mention just a few. Add to these the accepted neuroses, psychoneuroses, psychoses, include drug and drink addiction, and I think that Professor Osborne will agree that a fair portion of the therapeutic field is covered.

There is a most regrettable inherent and universal delusion. Each individual has a so-called mind, and each individual has the categorical conviction that he or she is cognizant of, and controls the workings of, this most doubtful attribute.

Nothing could be further from the truth. Reasoning is rarely the result of intelligence, but more often of the wish to believe. We live in a world in which traditional values are changing rapidly, in which the dogma of yesterday is coming to be regarded as the fallacy of today, and in which the hypocritical hoary formulæ and bombastic pretences of men and institutions are undergoing a modest degree of debunking.

Human nature, however, changes little, and although psychoanalysis provides no panacea for a disordered humanity, it does most certainly shed light on the causative emotional forces underlying the prevailing disharmony, individual and national. The main utility of psychoanalysis lies not in the alleviation of a few thousand neurotics *per annum*, but in the field of prevention.

Unquestionably the world is run by psychologically diseased people, but even if, in the words of Bernard Shaw, we are approaching that disastrous state of "government by mental defectives wielding irresistible powers of physical coercion", we have at least the smug solace that we have evolved throughout the ages from the primal grandeur of a universal psychosis to the comparative indignity of a universal neurosis.

In other words: once we were all raving lunatics; now we are just plain fools.

Yours, etc.,

E. HAZLETT FRAZER.

231, Macquarie Street,
Sydney,
May 8, 1936.

SIR: I have been interested to read the controversial letters in your journal on the subject of psychoanalysis. I was not at all surprised at the whole-hearted attack made on the Freudian theory and technique by Dr. McGeorge, frightened off, as usual, by the "sex bogy". It may be a relief to him to know that Freud himself and the orthodox Freudians have comparatively recently recognized the vast importance of repressed violence and aggression, as well as sex, in the formation of the neuroses. However, like Dr. Trahair, of Kenmore, I was more than surprised at his belief that the spread of interest in Freud's teachings during the past decade has been largely due to the "quacks". This I must flatly contradict.

It has been my privilege during the past two years to work on the staff of the Institute of Medical Psychology in London. This institute is an out-patient clinic for the treatment of the psychoneuroses, and was founded in 1920 as the Tavistock Clinic.

While accepting the general technique of psychoanalysis, the institute is attempting to find short cuts in this long and tedious process and to bring it within the reach of the general public. It is also a training school for psychotherapists—not for psychoanalysts. I may mention that a psychoanalyst is a graduate of the Freudian school who has been through the long and rigorous training insisted on by the society, and is bound to an acceptance of the Freudian theory and technique. I have met some of the Freudians and have attended many brilliant lectures and addresses given by them at their institute in London. No doubt many people, like Dr. McGeorge, would seethe with indignation at some of the theories put forth on these occasions, but it must be a very long time since any one of these men or women has been airily dismissed as a "quack".

To return to the Institute of Medical Psychology, about whose work and status I am naturally more qualified to speak. It is largely an out-patient clinic; it also has accommodation for six indoor cases, and the attendances there now average over 15,000 yearly. Its present satisfactory position is largely due to the efforts of Dr. J. R. Rees and Dr. Crichton-Miller. The point I wish to stress is not the success and efficiency of the psychotherapeutic methods (largely analytical) practised there, but simply the fact that as an institution it has been warmly accepted by the general public and the leaders of general medicine in England. It has over 65 fully qualified "quacks" on its staff, a large proportion of whom hold senior degrees. As only a limited number of patients can be adequately dealt with by these methods, the staff is quite unable to cope with the waiting list.

The institute has for its president His Royal Highness the Duke of Kent, who takes a warm personal interest in

it and publicly declared in a recent speech: "The work that this institute is doing is certainly national in its scope, and perhaps more than national in its importance, and as there are so few places in this country (England) where patients can receive proper treatment, they come to this institute from all parts."

Further, such men as Lord Dawson of Penn, Lord Horder, Sir Farquhar Buzzard, Sir Walter Langdon-Brown, Wilfred Trotter, Sir Humphrey Rolleston, George Riddoch, Bernard Hart, Professor Henderson, of Edinburgh, and other representatives of all the London teaching hospitals do not shrink from having their names on the Medical Advisory Board, while their vice-presidents include the Archbishop of York, Professor William McDougall and Mrs. Stanley Baldwin. Surely this too dazzling array of names would suggest that the medical profession, the British Medical Association and the general public have given the institute their blessing.

The institute, besides its therapeutic and training work, has also a large child guidance clinic and has recently been recognized by the University of London as a centre for lectures and clinical teaching in connexion with its diploma in psychology.

The staff are not bound to accept any rigid body of doctrine, as the Freudians must. In matters of theory some are Freudian, some are near-Freudian, some anti-Freudian; but most are eclectic, building up their theories from clinical experience. However, in technique they nearly all practise a form of therapy not very different form psychoanalysis, and even the sternest opponents of some of the Freudian theories in their calmer moments do homage to Freud as the father of the whole movement.

I hope Dr. McGeorge, even if he is quite sure there is nothing in it, is at least convinced that the recent spread of interest in Freud's theories is not due, in England at any rate, to the "quacks".

Yours, etc.,

CEDRIC SWANTON, M.B., F.R.C.S.E., D.P.M.

135, Macquarie Street,
Sydney.
Undated.

Obituary.

HORACE PERN.

DR. HORACE PERN, of Leongatha, Victoria, died on March 13, 1936. He had had a sharp attack of bronchopneumonia and passed away in a private hospital at Leongatha after an illness which lasted a week. He was born in Hampshire, England, sixty-three years ago, and was one of the sons of Dr. Alfred Pern, of Botley. Seven members of this family followed the father's profession. He qualified in England and came to Australia thirty-three years ago. He commenced practice at Smythesdale, but soon joined his brother at Yarram, where they practised together for some years. He returned to Smythesdale for some time and joined the Australian Army Medical Corps at the outbreak of the Great War. He was on Gallipoli during most of the occupation and left the Peninsula on the last boat. He was transferred with the 19th Battalion to France and endeared himself to the troops. He was a man's friend and a great soldier, and always showed a complete disregard for danger and great devotion to duty. His was a life of service and sacrifice. After the War he commenced his long and successful work in Leongatha, where he was held in very high esteem, not only by the people among whom he lived and practised, but by his brother practitioners. He was actuated by the highest motives and lived up to the best traditions of his profession. In 1929 the Editor of this journal asked him to write a special article on general practice in the country for the Education Number published that year. This article appeared in the issue of August 31, 1929. It shows what manner of man he was; it is both a confession of faith and an inspiration. It would serve admirably as an address to any body of medical graduands. He was interested particularly in arthritis and held decided views on the treatment of affected joints. Several of his contributions were published in this journal, and he was gratified when a long abstract of one of his papers was included, with appreciative comments, in a recent issue of the "Medical Annual". He was modest and could stand up to criticism; he often welcomed it, and he left his critic with the impression that he had been dealing with an honest and disinterested man.

He was President of the local Sub-Branch of the Returned Sailors and Soldiers' Imperial League of Australia for many years and occupied this position at the time of his death. The soldiers and the general public were frequently helped by him in their local problems, and the addresses he delivered on Anzac Day from year to year were greatly appreciated. He was buried with military honours. The medical profession offers its sympathy to his relatives and friends.

Major W. R. J. Scott, D.S.O., writes:

Major Horace Pern joined the 19th Battalion at Heliopolis Camp in Egypt just prior to its embarkation for Gallipoli. For more than two years he remained with us, and throughout the whole of that time his work was faultless and his bravery and devotion to duty were such that there was not an officer or man in the battalion who did not love him. It is difficult to measure the influence for good given out by such a man, or the number and diversity of those who will sorrow at his passing. During his active service in the field many thousands of sick and wounded men passed through his expert hands. After the War he returned to his home at Leongatha in Victoria, and there, until his death, he carried on the work which lay nearest to his heart, as local President of the Returned Sailors and Soldiers' Imperial League Sub-Branch. Into his daily practice he brought to bear all his service knowledge in the treatment of joints, and this special work has found expression in articles contributed by Pern to this journal.

I remember him visiting Sydney a few years ago in order that he might attend the battalion reunion. It was made known that Doc. Pern would be present, and never before or since have we had such a reunion. Men came from near and far to shake his hand again and to hear him talk.

He had no personal fear whatever and worked as well under fire and in extreme discomfort as he did out of the line. At Gallipoli, so excellent were his dressings that field ambulance units did not touch wounded men who had been attended by Pern. His continuous dressing of wounded during some of the worst fighting of the War, at Pozieres, for sixty hours without rest and under continuous and heavy shell fire was an epic of gallantry and devotion to duty. In spite of repeated recommendations for a decoration, from both his battalion and brigade commanders, none came his way. He was possessed of a very strong character and was sincere in both speech and action. An ardent lover of Nature, he was never happier than during those quiet, brief rests from duty on Gallipoli, when he could wander away, often alone, looking for botanical specimens or some new form of animal life. There is the classic story, which has become part of Anzac history, which describes the terror and amazement of the young private soldier who had paraded to Pern in the trenches at Pope's Post for an examination of hæmorrhoids. The boy was waiting, but Pern had quite forgotten him and, looking at the distant sky, was saying in a dreamy voice: "A lark! An English lark! the first I have seen on Gallipoli."

His stretcher-bearers were his especial pride and he worked them hard and taught them much when out of the line. Pern always seemed to get the best out of any man with whom he came in contact. I always felt that this was due to his great understanding of men and his ever unassuming and modest determination to play the game himself. He cared nothing for the good opinion of

others, but never failed to set an example which any man might have been proud to follow.

And today, while we mourn his passing, we are glad in the knowledge that in the hearts of the officers, non-commissioned officers and men of the old 19th Battalion his name and the memory of him will never fade. It was a great privilege to have known him and a greater to have served with him.

HENRY JOHN WOLBERTON BRENNAND.

THE following appreciation of the late Henry John Wolberton Brennand has been received from Dr. Kevin Byrne.

Harry Brennand was the only surgeon-captain in the Royal Australian Naval Reserve. He saw active service in the Sea-Going Division of the Fleet during the Great War, serving in His Majesty's Australian Ship *Melbourne*. Naval officers knew him affectionately as "Daddy". He was popular not only for his professional skill, but also for his delightful personality and kindly nature. He was a cultured man. His medical and general education was built on a broad foundation. He was a brilliant conversationalist, not only on scientific and professional subjects, but also on topics embracing literature, languages, history and music. As a *raconteur* he was a master. He was a polished performer on the pianoforte. Of lighter music, he was particularly fond of the works of Puccini. To those who knew him in the ward room mess the echoes of Puccini's arias that floated through the open ports will harmonize for years with the musical tinkle of Sydney Harbour waters lapping the foreshore rocks near Garden Island.

DENIS FRANCIS BARRETT.

DR. DENIS FRANCIS BARRETT, who died recently at Peak Downs, Queensland, was born at Orange, New South Wales, on December 26, 1902. His father, Denis Francis Barrett, was a public school teacher. Denis Barrett went to school at Saint Joseph's, East Maitland, and at Saint Ignatius' College, Riverview. He was *dux* of his school in 1918, matriculating the same year. As he was considered too young to take up studies at the university, he returned to college for another year, securing a high pass in the leaving certificate examinations. He represented his college in cricket and excelled at handball. He entered the Medical School at the Sydney University and secured the degrees of Bachelor of Medicine in 1925 and Bachelor of Surgery in May, 1935. He gained "credit" in each yearly examination. He held the position of resident medical officer at Saint Vincent's Hospital, Sydney, from 1925 to 1926. He then had the hospital practice at Blair Athol, Queensland, from 1926 to 1935. He was highly thought of by patients, hospital staff and committee. He was a good cricketer, batsman and bowler, district champion tennis player and successful golfer. He was married in 1935 to Miss Monaghan, of Clermont, Queensland.

Congresses.

INTERNATIONAL CONGRESS ON RHEUMATISM.

THE fifth international congress of *La Ligue Internationale contre le Rhumatisme* will be held at Lund on September 3 to 5, 1936, and at Stockholm on September 7 and 8. Professor Sven Ingvar, of Lund, will be President. Full information may be obtained from the Secretary, Professor G. Kahlmeter, Birgerjarlsgatan 36, Stockholm.

INTERNATIONAL CONGRESS ON HEPATIC INSUFFICIENCY.

AN International Congress on Hepatic Insufficiency will be held at Vichy in September, 1937. It will be preceded by the International Congress on Gastro-Enterology, which will be held at Paris on September 13, 14 and 15, 1937. The President of the International Congress on Hepatic Insufficiency will be Professor M. Loeper, of Paris. The General Secretary is Dr. J. Aimard, 24, Boulevard des Capucines, Paris.

Proceedings of the Australian Medical Boards.

TASMANIA.

THE undermentioned have been registered, pursuant to the provisions of the *Medical Act*, 1918, of Tasmania, as duly qualified medical practitioners:

Oliphant, John Alexander, M.B., B.S., 1931 (Univ. Melbourne), Public Hospital, Liverpool Street, Hobart.

Duncan, Campbell Amiet, M.B., B.S., 1933 (Univ. Melbourne), Public Hospital, Hobart.

NEW SOUTH WALES.

THE undermentioned have been registered, pursuant to the provisions of the *Medical Act*, 1912 *and* 1915, of New South Wales, as duly qualified medical practitioners:

Birks, Peter Macintyre, M.B., B.S., 1934 (Univ. Adelaide), St. George District Hospital, Kogarah.

Radcliff, John Rothwell, M.B., 1934 (Univ. Sydney), Royal North Shore Hospital of Sydney, St. Leonards.

Spence, Lockhart James, M.B., Ch.B., 1914 (Edinburgh), Bolton Street, Newcastle.

University Intelligence.

THE UNIVERSITY OF SYDNEY.

A MEETING of the Senate of the University of Sydney was held on May 4, 1936.

Associate Professor V. A. Bailey was appointed as Professor of Experimental Physics from May 1, 1936.

The Senate approved of the award of the degree of Doctor of Science to Mr. Colin Barnard, M.Sc.

The degree of Master of Surgery (Ch.M.) was conferred *in absentia* on Clive Rodney Boyce, M.B., Henry Pearlman, M.B., and Stuart Hammond Scougall, M.B.

The tenure of the Struth Exhibition in the Faculty of Medicine was extended from five to six years.

The following appointments were approved: Dr. M. R. Flynn, Dr. R. A. Money, Dr. W. Perry and Dr. J. S. MacMahon as Honorary Tutors in Operative Surgery; Dr. L. May, Dr. P. D. Braddon and Dr. V. J. Kinsella as Demonstrators in Anatomy.

Books Received.

SYNOPSIS OF CLINICAL LABORATORY METHODS, by W. E. Bray, B.A., M.D.; 1936. St. Louis: The C. V. Mosby Company. Crown 8vo, pp. 324, with 32 illustrations and 11 colour plates. Price: $3.75 net.

EMERGENCY SURGERY, by Hamilton Bailey, F.R.C.S.; Second Edition; 1936. Bristol: John Wright and Sons Limited; London: Simpkin Marshall Limited. Medium 8vo, pp. 852, with 812 illustrations, of which a large number are in colour. Price: 50s. net.

ZWEITE INTERNATIONALE KROPFKONFERENZ IN BERN, 10.-12. August 1933; edited by Otto Stiner; 1935. Bern: Hans Huber. Medium 8vo, pp. 749, with illustrations. Price: Swiss Francs 25.

EXAMINATION OF THE PATIENT AND SYMPTOMATIC DIAGNOSIS, by John Watts Murray, M.D.; Second Edition; 1936. St. Louis: The C. V. Mosby Company. Medium 8vo, pp. 1219, with 274 illustrations. Price: $10.00 net.

INTERMEDIATE BOTANY, by L. J. F. Brimble, B.Sc.; 1936. London: Macmillan and Company Limited. Crown 8vo, pp. 570, with illustrations. Price: 8s. 6d. net.

AN INDEX OF TREATMENT, by various writers, edited by Robert Hutchison, M.D., LL.D., F.R.C.P.; Eleventh Edition, revised; 1936. Bristol: John Wright and Sons Limited; London: Simpkin Marshall Limited. Super royal 8vo, pp. 1035, with illustrations. Price: £2 2s.

Diary for the Month.

MAY 26.—New South Wales Branch, B.M.A.: Medical Politics Committee.
MAY 27.—Victorian Branch, B.M.A.: Council.
MAY 28.—South Australian Branch, B.M.A.: Branch.
MAY 28.—New South Wales Branch, B.M.A.: Branch.
JUNE 1.—New South Wales Branch, B.M.A.: Organization and Science Committee.
JUNE 2.—Tasmanian Branch, B.M.A.: Council.
JUNE 3.—Western Australian Branch, B.M.A.: Council.
JUNE 3.—Victorian Branch, B.M.A.: Branch.
JUNE 4.—New South Wales Branch, B.M.A.: Clinical Meeting.
JUNE 4.—South Australian Branch, B.M.A.: Council.
JUNE 5.—Queensland Branch, B.M.A.: Branch.
JUNE 9.—Tasmanian Branch, B.M.A.: Branch.
JUNE 9.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
JUNE 12.—Queensland Branch, B.M.A.: Council.
JUNE 16.—Tasmanian Branch, B.M.A.: Council.
JUNE 16.—New South Wales Branch, B.M.A.: Ethics Committee.
JUNE 17.—Western Australian Branch, B.M.A.: Branch.
JUNE 18.—New South Wales Branch, B.M.A.: Clinical Meeting.
JUNE 23.—New South Wales Branch, B.M.A.: Medical Politics Committee.

Medical Appointments.

Dr. R. H. O. Donald has been appointed Health Officer of the Municipality of Zeehan, Tasmania.

* * *

Dr. E. W. Hurst has been appointed Director of the Laboratory of Bacteriology and Pathology, Adelaide Hospital, South Australia.

* * *

Dr. B. G. Johnston has been appointed a Member of the Medical Board, Port Pirie, South Australia, under the provisions of the *Workmen's Compensation Act*, 1932.

* * *

Dr. A. M. Martell has been appointed a Medical Referee for the purposes of the *Workers' Compensation Acts*, 1916 *to* 1935, Queensland.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", pages xvi-xviii.

DEPARTMENT OF PUBLIC HEALTH, PERTH, WESTERN AUSTRALIA: Junior Resident Medical Officer, Medical Officer.

FREMANTLE HOSPITAL, FREMANTLE, WESTERN AUSTRALIA: Junior Resident Medical Officer.

MOOROOPNA HOSPITAL, MOOROOPNA, VICTORIA: Junior Resident Medical Officer.

THE OTAGO HOSPITAL BOARD, DUNEDIN, NEW ZEALAND: Radiotherapist.

WELLINGTON HOSPITAL BOARD, WELLINGTON, NEW ZEALAND: Assistant Superintendent.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCHES.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associate Friendly Societies' Medical Institute. Chilliagoe Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY Hospital are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Lodge appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

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